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THE ZOOLOGIST:

A

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OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, MOLLUSKS,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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Price ONE SHILLING.

DOUBLE NUMBER.

The quantity of matter standing over on the 23rd of October necessitates the publication of a **DOUBLE NUMBER**, price **TWO SHILLINGS** (except to prepaid subscribers), on the 1st of December. The papers in hand are signed J. A. Power (2), Robert Hislop (2), Captain Hadfield (2), Henry Rogers (3), J. W. May (translation), Edward Newman (3), Captain Blakiston (2), H. Hornby, H. Pratt, H. J. Harding (2), G. C. Green, C. Healy (9). Also translations of Dr. Herrich-Schäffer's Notes on Recently-discovered British Lepidoptera, and M. Guenée's 'Monograph of the genus *Lithusia*,' so far as the same relates to species observed in Britain; and a notice with extracts of 'Unity of System.'

I may acknowledge the receipt of several communications signed "A Yorkshire Naturalist." As it is possible the writer, who is unknown to me, may not be acquainted with my invariable rule of inserting nothing that is not authenticated by a real name and address, I have not destroyed these papers; they cannot, however, be preserved longer than the 2nd of November.

BOOK RECEIVED FOR REVIEW.—'British Birds in their Haunts,' by the Rev. C. A. Johns. Every book sent for that purpose shall have a notice, but I cannot undertake to review books not sent, however great their merits. Neither can I publish any notice written by a friend of the author; the notice must be my own or written at my request. In sending books for review please always state the price.

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THE JOURNAL OF ENTOMOLOGY, DESCRIPTIVE AND GEOGRAPHICAL.—This volume includes papers by Messrs. Wollaston, Walker, Baly, Jekel, Chevrolat, Professor Westwood, Rev. Hamlet Clark, Messrs. Bates, F. Smith, Hewitson and Pascoe, and Dr. Stal, on the distribution, habits, synonymy and descriptions of about 635 new species of Insects, European and Exotic. Dr. Schaum, Messrs. Wallace, Murray, Bakewell and M'Lachlan will be among the future contributors.

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TAYLOR and FRANCIS.

NOTICES OF NEW BOOKS.

'*The Natural History of the Tineina.*' Vol. vii. (containing *Bucculatrix*, Part i., and *Nepticula*, Part ii). By H. T. STAINTON, assisted by Professor ZELLER, J. W. DOUGLAS and Professor FREY. London: Van Voorst. 1862. 252 pp. letterpress; 11 coloured plates.

THIS is one of the very few works which began well, and which have nevertheless improved as they proceeded. I prefer this seventh volume to either of its predecessors: it is more entomological. At the commencement both author and artists were eminently truthful: they copied and described what they believed they saw, and copied and described with a Chinese fidelity that at the same moment proclaimed their conscientious love of truth and their ignorance of the laws of homology. The descriptions at pp. 2 and 172 in vol. i., and the figures of larvæ on plate iv., exhibit confused ideas of those absolute natural laws for the position of legs and claspers, without the guidance of which we must infallibly go astray. In descriptions of the imago this conscientious method has its advantages,—hence the great value of Mr. Stainton's volume of the '*Insecta Britannica*,' which, despite apparent pedantry in the use of italics and some other trifling defects, will long be justly considered an invaluable contribution to the science of Entomology. All this is amended now, and the figures of larvæ, alike artistic and scientifically truthful, leave nothing to be desired. The life-histories of the species are equally excellent with the figures, but the arrangement is still susceptible of improvement. For instance, the "description of the larva" and "its mode of life" are inconveniently separated by the interposition of the description of the imago: there is also a want felt in the frequent absence of all notice of the pupa, a state which in these *Micros* may be supposed to present very interesting characters; indeed, where observed, as in *Micropteryx* and other genera, their structure has been found strikingly different from that in the more familiar *Macro-Lepidoptera*, and equally different one from another, thus furnishing me with an additional argument in favour of the opinion I expressed long ago that these *Micros* are allied or rather associated by the single character of their diminutive size. But this is enough of generalizing. I will now select for quotation a few of the life-histories which I have characterized as being so excellent, the title of this work having already explained that the

contents of the volume comprise only portions of the genera *Bucculatrix* and *Nepticula*.

"Bucculatrix cidariella. The larva feeds on the leaves of the alder in August and September. At first it mines the leaf, making very slender galleries; these are rather long for larvæ of this genus and slightly curved: immediately it quits the mine it spins a flat, pale ochreous cocoonet on the under surface of the leaf, beneath which it then reposes in a horse-shoe form till it has cast its skin; it then becomes an external-feeding larva, feeding principally on the under surface of the leaf, which it gnaws half through. When mining, the colour is greenish, with the head blackish, and with a conspicuous black spot on the back of the second segment. When become an external feeder its length is three lines, its colour yellowish green, the three first segments orange, the dorsal vessel darker; along each side are two rows of minute white dots, and two other rows on each side of the back. When full fed the larva generally descends to the ground, and, seeking a secure retreat, it spins its ochreous-ribbed cocoon from which the perfect insect emerges in the month of May or June of the following year."—(Pp. 40—42).

I ought to observe that I have brought together the component parts of the foregoing paragraph in order to show how I think they ought to have been arranged. I proceed to descriptions in which I have followed the author's arrangement.

"Bucculatrix ulmella: Mode of Life.—The larva feeds on oak leaves (according to Mann also on elm leaves, but here I had strongly suspected some mistake, as in various localities I have constantly observed the insect amongst oaks, but never amongst elms; but Professor Frey assures me that he has repeatedly bred *B. ulmella* from *Ulmus campestris*, and that the best locality for the larva at Frankfort in September is a row of elm trees). The young larva makes small contorted mines in the oak leaves, and these are almost invariably placed close to a rib; these mines are filled with brown excrement; they may be always readily distinguished from any of the mines which are made in the oak leaves by the larvæ of the genus *Nepticula* by their extreme shortness, as at an early age these larvæ quit the mine to feed on the external surface of the leaf. Before commencing, however, this latter operation it spins a white cocoonet under which to moult; it leaves its cast skin in a coiled position beneath this shelter; the larva then feeds for some time on the surface of the leaf, which it eats half through; when full fed it descends to the ground and seeks some convenient corner wherein to spin its small yellowish ribbed cocoon. There are

two broods in the year; the larvæ which feed in July produce moths in August; the eggs laid by these furnish the caterpillars which we find in September and October; these remain the whole winter in the pupa state, and produce moths from the middle of May to the middle of June."—(P. 49).

Here follows a minute description of the imago.

"*Description of the Larva.*—Length $2\frac{1}{2}$ lines. Pale olive greenish gray, with a darker stripe along each side; spots whitish; head pale brown; second segment brownish gray, with two rows of small black dots. The above is the description of the external-feeding larva; before it quits the mine it is very different; it is then entirely yellowish, with a brown black band and a T-shaped mark on the back of the second segment."—(P. 52).

The following passages cited from the writings of the immortal Lyonnet are still more interesting. I do not hesitate to transcribe them, since the posthumous volume of Lyonnet's works published by Dr. Hann, in which they occur, is very little known, and I may almost say *never* read in this country.

"This industrious larva is little more than two lines long. It has sixteen legs; under a lens its body appears covered with tubercles the colour of parchment; along the back is a broad grayish streak; the rest of the body is brown; the seventh and eighth segments appeared to me darker than the others, and on the first segment instead of tubercles we see eight black dots.

"These caterpillars keep on the under side of the leaves of the oak, which they gnaw without covering themselves up, and there also they construct their cocoons, which mine did during the month of August.

"These cocoons are whitish and ribbed; one counts between the grooves seven ribs, which run the whole length of the cocoon, but which appear to have been broken and patched again a little beyond the middle; the very singular form of these cocoons made me anxious to see how the insect set to work to construct them, and on the 20th of August, 1744, I had an opportunity of satisfying my curiosity.

"I then saw that the larva first commenced by surrounding itself by twenty posts (so to speak), which it ranged in an ellipse around it: these imitation posts were constructed of silk; they were stiff, elastic and thicker towards the base than towards the top; they form no part of the cocoon itself, and I can conceive no other use for them than that of protecting the larva, whilst at work, from coming in contact with leaves or other substances, which, agitated by the wind, might otherwise inconvenience it.

"Having prepared this sort of enclosure it commenced to spin its cocoon in the interior, beginning near one of the extremities of the major axis of the ellipse; having agitated its head for two or three moments with very great activity, I saw that one end of the cocoon began to appear and already displayed its grooves. I observed the construction attentively through a powerful glass, and I found that the relief of the grooves arose from a row of angular meshes which advanced one beyond the other and were fastened down by the threads, which passing over these meshes were fastened on both sides to the body of the cocoon; between the intervals of each of these rows of meshes I saw a very regular network of simple threads, which in crossing formed a series of lozenges. The caterpillar continued this work with surprising quickness, which prevented me from being well able to follow its movements, and had spun in a few moments nearly a third of the length of its cocoon.

"Up to this time it remained entirely outside its cocoon, working backwards like a ropemaker, but then it entered it head first, and having turned round it protruded the anterior part of its body from the open end of its cocoon, and having extended its head sufficiently far, it commenced the other extremity of its cocoon, adopting a proceeding precisely similar to that which it had put into execution at the opposite end. It continued to work thus till the space which was left open between the two portions of the cocoon became so contracted that the larva could no longer move its head; then it withdrew entirely within its cocoon, turned itself on its back, and, spinning from below, so caused the two portions of the cocoon to approach each other that at length they met; but since the ribs of the second portion of the cocoon do not meet precisely in the same line with the ribs of the other end, a break in their continuity is caused, as we have already remarked.

"All the work which I have just described was finished in about half an hour, but it was not sufficient to shelter the larva from atmospheric influences, nor from extraneous injury. The larva was then only enclosed as in a pretty cage, through which it might be easily perceived; however, it soon set this to rights by spinning against the interior of its cocoon till it was completely enclosed; this occupied it for some hours, and as I was then no longer able to see it, I know not whether it continued to spin for a greater length of time.

"When these cocoons are finished they have much consistence; they are able to resist a moderate pressure, and one can no longer per-

ceive that regular arrangement of the threads of which the framework is composed.

"The chrysalis of this larva is one of that class which serve as useful instruments to the moths within them in order to escape from the cocoon when the time for that attempt arrives; that is to say, this chrysalis is one of those which have the back armed with spikes, directed obliquely towards the tail, by means of which, when the moth should escape, it presses forward against the end of the cocoon, and, leaning on these points, which prevent it from slipping backwards, presses so strongly that at length the cocoon breaks and affords a passage to the chrysalis, which, after protruding its anterior segments, itself yields to the efforts of the moth, which opens it, disengages itself from it, and thus finds itself liberated both from the chrysalis and the cocoon."

The only other descriptions I shall cite are selected from the genus *Nepticula*, and these, equally with those which have preceded, will abundantly support my observations as to the care which the author has bestowed on every branch of the subject. With regard to the limits of species opinions will and must differ. Mr. Stainton does not view this question under the light thrown on it by the still imperfect theories of isomorphous pairs and dimorphism: this may yet be hoped for; but let us accept with gratitude what is placed at our disposal: no other entomologist living has ever sacrificed so much time and money for what can only be appreciated by the instructed few.

"Nepticula argentipedella: Mode of Life.—The egg is laid on the under surface of the birch leaf, and very frequently close to one of the lateral ribs. The larva mines a blotch of irregular form, but the commencement is always of a peculiar dark brown, and remains conspicuous, the remainder of the blotch being only a pale greenish brown; the excrement is scattered quite irregularly in the mine, and never forms a definite track. When the larva is full fed it comes out on the upper surface of the leaf, and descends to the ground, where it constructs its dark green cocoon. There seems to be only one brood in the year, the larva occurring at the end of September and in October; in some localities it is excessively abundant. The perfect insect appears at the end of May and beginning of June.

"Description of the Larva.—Length $2\frac{1}{2}$ lines. Pale greenish, dorsal vessel bright green; head and second segment light brown, the mouth and two lines receding from it reddish brown; beneath is a row of dark reddish oblong spots down the middle."—(Pp. 212 and 216).

"Nepticula atricollis : Mode of Life.—The egg is deposited on the under surface of a leaf of hawthorn or wild apple. The young larva mines an extremely slender mine close to the edge of the leaf, going in and out of each serrature; this slender mine is about an inch in length, and is almost filled up with the brown excrement; the larva then commences mining on a different plan, making a broader mine, and eventually a large blotch, of which the brown excrement occupies only a very small space; this blotch assumes rather a peculiar brownish green tinge, especially on the leaves of the hawthorn: when the larva is full fed it comes out on the leaf, and seeking some convenient corner constructs its blackish green cocoon. There are two broods of this insect in the year, the larva occurring in October and more sparingly in July. The perfect insects appear in May and at the beginning of August.

"Description of the Larva.—Length 2 lines. Pale greenish, with dark green dorsal vessel; the eleventh and twelfth segments with a reddish tinge; the head and second segment blackish brown; beneath is a central row of dark spots."—(Pp. 228 and 230).

In conclusion I can only add that this work has my most cordial recommendation. It is quite immaterial whether I think with the author on all points; no one can possibly deny him the credit of having produced a work of great beauty and accuracy, and one the utility of which is even now only beginning to be appreciated.

EDWARD NEWMAN.

Among the Ainos. By ARTHUR ADAMS, Esq., F.L.S., &c.

WE have been driven by the fury of a gale through La Perouse Strait into the Sea of Okhotsk, and are now quietly at anchor in Aniwa Bay.

This grand Bay, forty miles deep, is on the south end of Saghaleen, as the Ainos call their island. These aborigines also term it "Isoka;" in fact, I find that Geographers as well as Naturalists may sometimes be embarrassed by a multiplicity of synonyms. The Japanese call the island "Oku-Yesso," the Russians "Sachalien;" it is named by old writers "Karafto," and in ancient maps it is "Sahalien," "Ula-hata," "Auga-hata," "Island of the Black River" and "Amur." By Siebold, followed by Keith Johnson, it is called "Tarakai," but the name by

which it is generally known is "Saghaleen," derived from "Sagarün," one of the names of the Amur River.

The general features of the island are very similar to those of the opposite coast of Manchuria. Primary formations compose hills and rocks of varying heights, and wild tracks of country covered with high rank grass, scrub and masses of fine trees. The most conspicuous trees are conifers, pines, yews and junipers. A dogwood is common, and I observe a beech, an oak, and a species of *Euonymus*. The aster and pink, a small gentian, the flower-of-yarrow and St. John's wort, a species of *Ribes*, and the pretty white-flowered grass of Parnassus, are among the common plants. A dark *Marchantia* covers the ground in damp places; a *Lycopodium* is conspicuous in similar localities, and of ferns I gather a species of *Pteris* and a *Polystichium*.

As we land in a shallow bight of the splendid Bay we observe the duck family in full feather. The pretty golden-eye is swimming and diving near the shore, or indulging in little playful flights on and off the land; flying wildly and uttering loud cries are the elegant long-tailed ducks; the whistling widgeons pass by in twos and threes; and, conspicuous in the bustling noisy crowd, are the beautiful shieldrake and the solitary shoveller. These, with the mallards and the teal, make the shallow waters of the little sandy bays vocal with their quackings and screamings, and highly amusing with their loves and quarrels, their flutterings, alarms and greedy gobblings. The little guillemot turns gaily about in the water, and the long necks and pointed heads of the divers are seen at intervals above the surface.

At the water's edge the golden plovers and the sandpipers come trooping along the mud-flats, while the shrill whistle of the oyster-catcher and the cry of the curlew are heard in the distance. Half buried in the shingly beach is the huge skull of some hapless whale, stranded in the shallows after having sought shelter in the Bay, and just before we land a black bear is seen trotting along the beach. Before he has climbed the red cliff behind him he is saluted with a rifle ball, which causes him to turn his head and cast an angry glance upon the intruders of his solitude. We find the sea-weed scratched up by Bruin, who has been down foraging for shell-fish, dead crabs and mollusks being numerous on the strand after the recent gale.

The captain and myself land and discover the abodes of the Ainos in precisely the same manner as did M. de Langle and his companions in the time of La Perouse. "They saw a litter of blind puppies, the mother of which barking in the woods led them to suppose that the owners were not far off." A half-scared woman, seeing us approach,

endeavours to conceal herself in the tall grass. She is, however, detected, and good-humouredly hunted down, when she makes for the door of a little smoke-dried hovel. Pushing gently aside the sliding board which serves the purpose of a door, we enter smiling, and lo! the entire family is before us. The countenance of the frightened damsel is shrouded by a veil of loose black hair, and all are silent, solemn, squatting on their hams around the fire; Gipsy-fashion an iron cauldron, with its seething mess of fish, hangs suspended in the midst. No sign of welcome is made, no peace-offering accepted. We therefore quietly withdraw, and enter another and a larger hut.

Four men are seated around the smouldering wood fire solemnly smoking, while two young women are clearing away the fish-bones and fragments that remain from the recent meal. The interior of the dingy abode is lined with matting, and on a raised platform on one side are an old woman and some children. The captain and myself seat ourselves among these strange people, and endeavour to win the hearts of the women by pictures from the 'Illustrated London News,' which they accept timidly and contemplate upside-down; the absurd little brown monkey-like imps are regaled with sweet biscuits, which they shyly munch with silent gusto, and the stolid hairy men are propitiated with tobacco, which they slice up and smoke instantler. It is a pleasing thing to note the skilful way in which one little savage lights his grandmother's pipe, and wonderful to observe that ancient dame with a black mane, crouching on all fours, like some hideous Sphinx, smoking the soothing weed.

The dress of the men is composed of coarse canvass or the skins of dogs and seals; their legs are protected by laced buskins, and their feet by clumsy straw sandals. Every man carries a knife in a wooden sheath, and a carved tobacco pouch. The lips of the women are tattooed of a pale black colour, and their coarse straight hair is neither gathered up in a becoming knot, nor confined by coquettish net or other feminine device, but is simply parted down the middle, and very much resembles a huge black mop. These "unlovely" women have enormous metal ear-rings depending from the lobes of their ears, and necklaces of coloured beads adorn their necks. They are clothed in silver-gray or spotted seal skins, with long boots of the same material reaching above the knee; a black leathern girdle, or "*cestum Veneris*," encircles their waist, the which is covered with brass ornaments, and to which is invariably suspended the all-useful knife. Oysters, mussels and scallops, mingled with the bones of salmon, seal and porpoise, are thrown in heaps around their houses, showing their piscivorous

propensities, and giving evidence of the debt these poor people owe to the sea. The one idea of their existence seems to be the capture of salmon. These noble fish they sell to the Japanese, "reserving," says La Perouse, "for themselves only the stench, which adheres to their houses, furniture, clothes, and even the very grass surrounding their villages."

As they come striding through the tall grass, with their bows and spears, and their long hair streaming in the wind, they give one the idea of being formidable savages, but this ferocious exterior resembles the ass in the lion's skin, and only serves as a cloak to hide a harmless timid nature. On suddenly meeting a party in the woods the men crouch down and the women and children "hide their diminished heads." Their hirsute limbs, long tangled hair and bushy beards have earned for them the soubriquet of "Hairy Kuriles," but on close inspection the general expression of their faces is good nature and stupidity, which is fully borne out by their large heads and clumsy figures.

The Ainos are certainly not the original stock from which the Japanese have sprung, as they have little in common either physically or morally. Their language even is different, being similar to that spoken by the Kuriles. This is the opinion of M. de Rosney, who observes, in his 'Introduction to the Study of the Japanese Language,' "it was considered very probable that the natives of the islands situated in the seas to the north of Japan might speak an idiom approaching to that of the Japanese, and consequently might belong to the same linguistic family. The study of the Aino language and of the different dialects used in the island of Yesso and the Kuriles, oblige us to consider this opinion as completely inadmissible."

In two respects I observe these Aino tribes resemble the aborigines of Formosa, who are called by the Chinese "Tai-lo-kok." Mr. Swinhoe, who saw a few of them, observes that "their hair was short and fringed on the forehead, behind it hung loose." The second peculiarity is the circumstance of their arrows having no feathered shaft, which appears very strange, as birds are abundant and feathered shafts would seem to be in vogue among all who habitually use the bow. I do not know if there is any linguistic affinity between these two tribes of wild men. M. de Rosney says, "The Formosan language, or that of Formosa or Tai-wan, appears itself to be a branch of the Oceanic family."

ARTHUR ADAMS.

Effigy of an Eagle in copper.—At Fortnum and Mason's, No. 191, Piccadilly, there is now being exhibited a life-size figure of an eagle which has excited the admiration of all who have seen it, so wonderfully accurate is the imitation of Nature, so exquisite the workmanship. "It stands," says a writer in the 'Times,' "on the summit of a rugged and precipitous rock, in a bold and threatening attitude. With wings outspread ready for a dash at his quarry, or to withstand a human foe, the bird, with one claw advanced, firmly grasps with his talons the rocky ledge, while, with head protruding and open beak, he absolutely seems to scream warning and defiance. The keen eye peering from under the shadowing ridge of the skull, the rising feathers of the crest, the swell and ruffling of the muscular neck, form a picture of savage anger as true to nature as it is admirably conceived and executed. * * * Every one of the minute feathers which cluster round the neck, the fine hair-like down which runs from the beak to the eye, the soft cushion of plumage at the junction of the wings and body, are here separate, and can be each separately raised by the finger. The half-hairy, half-feathery legs of the bird are wonderful in the fineness of the down which overspreads them. The most extraordinary triumph of Mr. Phillips's skill, however, is shown in the extremely minute feathers which cover the frame of the pinions, and which conceal the fastenings of the large feathers forming the tips of the wings. It would be impossible to overrate this portion of the work, so numerous and so thick are the feathers, and so soft and deep is the effect produced." The entire work is in copper, and Mr. Phillips, the artist and owner, has thus explained its manufacture to Mr. Buckland, who has published, in the 'Field' newspaper of October 11, the following account of this new process:—"Mr. Phillips explained to me that all before me (rock and bird) was made of copper. He set to work some six years ago in this way:—He first made the body of hollow copper, and the bird then resembled a plucked fowl; he then proceeded to put the feathers *on*, instead of taking them *off*: what a difference in the facility with which these operations are performed! He obtained some slips of the finest copper from Japan (it is only allowed to be sent over from that country in slips), and he began to cover the bird feather by feather; each feather is, indeed, a study by itself, and he showed me the process of making them. A real feather is placed on the table, a slip of copper is cut out its size and dimensions; it is then hammered into shape, and with peculiar graving tools is graved on the surface, and cut at the edges, till it is the exact model of the feather itself, each feather having to pass some twenty-six or twenty-seven times under the hammer and the graver, and having frequently to submit to great heat. Some of the feathers—their name is legion—are huge things, above eighteen inches long, such as we see in the bonnets of Scotchmen; the quills of these are hollow, as in the natural state; others are as minute as the down upon a young chicken, or as fine as human hair: witness the feathers about the legs and over the eyes and nostrils of the bird. I could not make out," continues Mr. Buckland, "how it was possible for human hands to put all these feathers on to the copper body of the bird, and this in such beautiful and regular order. Mr. Phillips, however, informed me that every one was soldered on, and that he began at the feet, and soldered the feathers on one over the other. Now, unless some colouring process had been adopted, the copper eagle would have had a dull, and possibly a verdigris, appearance. Mr. Phillips has, however, managed to overcome this difficulty. The mode of colouring which he has employed is a secret of his own; but whatever the process may be, the result is most beautiful: there is a glitter and gloss upon the bird only to be equalled by the plumage of a wild bird who

is in the highest condition of health. Mr. Phillips has taken for his model—a lesson to thousands of modellers—Nature herself. He has plucked the dead bird feather by feather; he has studied the living bird in its most striking attitude and its most lustrous plumage; and he has produced a work which no naturalist, however sceptical, can find a fault in, and which is perfection itself." I strongly recommend my readers to visit this extraordinary work of art: it is a model of laborious painstaking which contrasts very favourably with those frightful productions generally exhibited in taxidermists' windows under the name of "stuffed birds."—*Edward Newman.*

Blue Eggs of Chaffinch.—Lately I have seen several notices of blue eggs of the chaffinch. I have seen several, and have two eggs which I took last May, both of them unspotted and of a bluish colour; one, however, has a pink tinge over the thick end.—*Robert W. Leven, Windygates, Fifeshire, October 4, 1862.*

Deposition of Eggs by the Cuckoo.—It appears that my remarks upon the cuckoo (Zool. 8164) have been slightly misunderstood; but this I can scarcely regret, seeing that this very circumstance has called forth some highly interesting observations from Colonel Newman, which might otherwise have remained unrecorded. In my statement, that "in most cases a remarkably short interval elapses between the arrival of the cuckoo at the nest and the deposition of the egg," I lost sight of the fact that the truth of my assertion had been established in a great measure by means of observations upon the habits of the bird, made during the hours of broad daylight, the very period at which, as I have endeavoured to prove, the egg is most likely to be carried in the bill of the parent; therefore I now freely allow that the egg may be placed in the nest after the usual manner among birds more frequently than I formerly supposed; for it does not follow that because the bird has never been seen in the act late in the evening, while there was yet sufficient light for the discovery of a suitable nest, that such an act is therefore improbable. Nor is it my belief that it is by any means a common occurrence for the cuckoo either to turn out and destroy young birds, or to deposit her egg in the nest after incubation by the foster-parent has commenced; indeed the contrary may be accepted as the rule; but that such does occasionally occur there is not the smallest doubt. And in addition to my former statement I would call attention to the following extract from my note-book:—"June 11th. On looking into No. 11 chaffinch's nest this morning, I saw the young ones alive and well; but upon my return, some hours afterwards, a cuckoo flew out from the nest. Two of the young ones were still there, but the remaining three were struggling upon the ground. These I replaced, and it was probably owing to my interference that the cuckoo did not again make her appearance at the nest." Some of the numerous readers of the 'Zoologist' have doubtless met with instances of a similar nature. In an exceptional case—such as that in which the cuckoo deposited her egg in the nest of the meadow pipit, the latter having already hatched some of her young—the probability is that the foster-parent would, after the lapse of a few days, remove the egg of the intruder, just as she would do with an addled one of her own; and it is not impossible that, in the event of her own brood being destroyed, she might even bestow her care upon the cuckoo's egg, and recommence the task of incubation, although her case would certainly be a hard one. We cannot blind ourselves to the fact that instances of cruelty and oppression are not confined to mankind alone, and that the Creator, for the fulfilment of some wise purpose which it is not for us to investigate, suffers them also to occur among lower animals; therefore the objection to my views by the question of *cruelty* can scarcely hold good; for might we not upon the

same ground deny that the young cuckoo casts out of the nest a number of helpless beings, consigning them to unmerited death in order to promote its own well-being? It would ill become me to contradict any statement advanced by a naturalist of such ability as Colonel Newman; but, lest he may imagine that I have been misled by the accounts of others, I will merely remark, with all deference, that, however unskillfully I may have handled my theory, the main facts which have been adduced in its support have occurred beneath my own observation, and are therefore beyond dispute. — *Henry L. Saxby; H.M.S. 'Devonshire,' Sheerness, October 2, 1862.*

*Remarks on Pallas's Sand-grouse (Syrhaptes paradoxus).** — Our Secretary having entrusted to my charge an example of *Syrhaptes paradoxus* which died at the Gardens, I am desirous of recording the results of my examination of it. I must apologize for the imperfection of the observations I am about to offer. I have not been able to compare the skeleton of this bird with that of other sand-grouse, except from memory; and I prefer to confine my remarks to the structure of the sternal apparatus. This, as is the case in other species of the peculiar group to which *Syrhaptes* belongs, offers at first sight an unquestionable resemblance to that of many of the *Columbidæ*, particularly of those members of the family which possess terrestrial habits. The similarity seems principally to arise from the form of the lateral processes of the sternum, which in *Syrhaptes* are widened and partially united to the main portion, as in *Chamæpelis* and *Geopelia*, instead of being singularly prolonged and acuminate as in the more typical *Gallinæ*. The resemblance is also increased by the exceedingly deep keel, which is of similar conformation to that of the *Columbidæ* generally. But here the likeness ends. The coracoid bones, which I am inclined to regard as the most characteristic in, as they are the most peculiar to, the ornithic skeleton, are plainly framed on the true Gallinaceous model. The furculum is very different from that of any other group of birds which I happen to remember, and bears no resemblance to the same bone in the *Phasianidæ* or *Tetraonidæ*. Still less, however, does it indicate any approximation to the same part in the *Grallæ*, or I may say of the *Columbidæ*, with both of which groups the sand-grouse have been supposed to have affinity. From the peculiarities, therefore, of the sternal apparatus I am fully of opinion that Bonaparte, and those authors who have followed him, are quite right in elevating it to the dignity of a family (*Pteroclidæ*), though I imagine they were chiefly led to that conclusion by an examination of the external characters only. I should have felt it incumbent upon me to have made some remarks on the information possessed by naturalists respecting this rare and curious bird; but almost all that can be said on the subject has recently been admirably recapitulated in a paper by my friend Mr. T. J. Moore, in the 'Ibis' for last year.† I would, however, observe that although the illustrious Pallas has the credit of first giving a description of this bird, he does not appear to have seen more than a single example of it, which was obtained in the Kirghis steppes by Nicolas Rytchkof, and mentioned by him in his Journal.‡

* Read before the Zoological Society of London. Communicated by the author, Alfred Newton, Esq., M.A., F.Z.S.

† The 'Ibis,' 1860, p. 105.

‡ 'Kirghis-Kaisazkoi Stepie, &c. St. Petersburg, 1772, p. 40.' I have not been able to see this work, and only quote the reference at second hand. — A. N.

And of this example, judging from the figure given of it, not only, as Pallas himself says, "*Cauda in specimine deerat*," but it also appears to have lost the elongated portion of the shafts of the outer remiges, which form so singular a feature in the species, and which, as we see by the state of the birds in our Gardens, are no doubt easily broken off. I must be allowed to add that I think this circumstance greatly favours the supposition that the specimens which were obtained in Western Europe in July and August, 1859, were not indebted to any human interference for their transport; for I have had the good fortune to examine all four of them, and each possessed these extraordinary appendages in nearly perfect preservation.

The Sandpiper a Diver. — In the 'Zoologist' for this month (Zool. 8195) there is a communication concerning the fact of the common sandpiper being a diver. I remember having taken a note some time back of an occurrence somewhat similar. I had wounded a sandpiper, and it fell into the river. On wading in to secure it, to my surprise it disappeared beneath the surface, and reappeared again at a considerable distance from me. I again waded towards it, and this time came much nearer, when again it repeated the manœuvre, and I distinctly saw it, at about a foot below the surface, making off as hard as it could by the united aid of two legs and one uninjured wing. I never observed one doing the same either before or since, though I have wounded several much in the same way. — *John A. Harvie Brown; Dumpace House, Falkirk, October 6, 1862.*

The Sandpiper a Diver. — I notice in the 'Zoologist' for this month (Zool. 8195) an article on 'The Sandpiper a Diver,' which it would appear is not generally known. I have noticed it often when wounded, and on one or two occasions while the birds were amusing themselves on the shore or bank of a stream: whether they were after food or not I cannot say. The first time was in 1855, on the banks of the Jed, near Jedburgh: I wounded a sandpiper which alighted on a stone in the middle of the stream, and on my wading in for it, it jumped into the water and swam underneath to the bank, where I secured it. I have seen them dive four or five feet deep, and that not by plunging in, but from the surface. They swim well, carrying the head a little back, and the legs rather higher than the breast: they use both wings and legs, are quick in their motions, and appear to swim with great ease and comparatively swift. The sandpiper is an elegant little bird in the water. I never saw one swimming on the surface, unless wounded. — *Robert W. Leven; Kennaway Burns, Windygates, Fifeshire, October 4, 1862.*

Occurrence of the Curlew Sandpiper at Rochester. — About a week ago I saw a fine example of this species in the possession of a boy who had just before killed it with a stick a little above Rochester Bridge. It was extremely fat, and the stomach was full of sand and small worms. I afterwards observed eight more upon some marshy ground near the same spot. — *Henry L. Saxby; H.M.S. 'Devonshire,' Sheerness, September 24, 1862.*

Occurrence of the Common Skua near the Land's End. — The large skua (*Lestris catarractes*) seldom makes its appearance on our coasts, but I have to record one that was obtained a few days since near the "Wolf" Rock, off the Land's End. — *Edward Hearle Rodd; Penzance, September 22, 1862.*

On the Geographical Distribution of the European Fresh-water Tortoise (Emys lutaria).—In the notice of my lately-published paper 'On the Zoology of Ancient Europe,' which you did me the honour to insert in the last number of the 'Zoologist,' there occurs a statement likely to mislead some of your readers. You speak of the European fresh-water tortoise (*Emys lutaria*) as "never having been found in the North of France, Holland, Belgium, Denmark, Sweden or Norway" (Zool. 8190). Now in my pamphlet (pp. 22, 23) I cited the cases of the remains of no less than four individuals of this species which are recorded by Professors Dalman and Nilsson as having been found in Sweden under circumstances very similar to those discovered by Mr. Birch in this neighbourhood. I besides mentioned the curious fact of the capture of a living specimen, many years ago, in that country, adding, however, that Professor Nilsson supposed at the time that it must have been an imported animal. I also showed, on Professor Steenstrup's authority, that bones of three different examples had been found in Denmark, under conditions substantially the same as the Norfolk specimens.—*Alfred Newton; Elveden Hall, Thetford, October 10, 1862.*

[I should have perhaps expressed my meaning more clearly had I written "never having been found living and indigenous in the North," &c. The occurrence of fossil tortoises and tortoise remains, both on the Continent and in Britain, is very familiar to geologists: I never intended to call in question statements universally accredited; but, in justice to Mr. Newton, I have much pleasure in extracting entire, the passages to which he refers.—*E. Newman.*]

"The first notice of the discovery of a fossil tortoise in Sweden seems to be by Professor Dalman, who gives an account (Vetensk. Acad. Handl. 1820, II. p. 286, tabb. vi., vii.) of some remains found in digging the Götha canal, near Norsholm, in Östergötland. They appear to have been in peat earth, over which a bed of gravel had been super-imposed. About twenty years later Professor Nilsson (Vetensk. Acad. Handl., 1839, pp. 194, 210) noticed a like discovery made in two places—Gräfve in the pastorate of Bragarps, and Fuglie in that of Hvällinge—both in Scania, and then pointed out what seemed to him to be some differences between the well-known *Emys lutaria* and the Swedish examples, which he separated as '*var. borealis*.' In 1842, the same naturalist states (Skandinavisk Herpetologi, p. 11, note) that more than twenty years previously he had received, through a student, a living specimen of the European water-tortoise, captured near Falsterbo, the extreme south of Sweden, which, at the time, he thought must be an imported animal, accidentally escaped, and so neglected to make further enquiries respecting it. He likewise added that he had recently obtained from another source fragments of a fossil water-tortoise found in a moss in Öland. This he identifies with the modern *Emys lutaria*, and appears content to allow his own variety '*borealis*' to sink into oblivion, as if doubtful of its validity even as a local race. For the occurrence of tortoise-remains in Danish bogs, I can only refer to a statement made by Professor Steenstrup (Overs. Vid. Selsk. Forhandl. 1848, p. 74) respecting an imperfect example of the '*Emys lutaria, var. borealis, Nilsson*,' found in a moss at Overdraaby, in Zealand; while, a few years later, he announced (Overs. &c., 1855, p. 1) the discovery of the dorsal and sternal shields of another individual in a moss at Egholm, not far from the last-mentioned locality, and it is also stated (*op. cit.*, p. 184) that the remains of a third—but smaller and younger example—had since been obtained at the same spot."

The Fresh-water Tortoise an Inhabitant of Great Britain.—I was exceedingly startled to read, in the last number of the 'Zoologist' (Zool. 8190), an extract from

Mr. Newton's essay 'On the Zoology of Ancient Europe,' in which he says the remains of a fresh-water tortoise have been discovered in recent peat in Norfolk. The following has been in print some months in a supplement prepared by myself to a forthcoming work, by Sir Oswald Mosley, on the Zoology of this district:—"Cistudo europæa, Cuv. (The Spotted Marsh Tortoise). This species is introduced, owing to an example having been captured, in the early part of the summer of 1857, on the banks of the canal near Burton. It is not a species that can be kept long in captivity; but it is probable it may have lived for a long period in the canal, or even have bred there, if accident had provided it with a mate. This animal is said not to take food excepting in the water. The individual in question died very soon after coming into my possession." When I penned the above remarks, I had no other idea than that my specimen, improbable though the supposition was, had been kept in an aquarium, and had escaped accidentally from captivity. With the evidence, however, adduced by Mr. Newton, of the recent occupancy of this country by a fresh-water tortoise, it appears to me to be the less improbable supposition, to view my specimen as a truly British-born and indigenous individual. The names *Cistudo europæa* and *Emys lutaria* are treated as synonyms by some authors, but even should not that be quite correct, it is very probable a mistake may have been committed in naming the imperfect Norfolk remains *Emys lutaria* of Gray. The spotted fresh-water tortoise lives in lakes and marshes, some of which are situated in the extreme South of Europe, others as far North as Prussia; and it is said to bury itself in the mud during the greater part of the summer, and to hide in some hole on land in winter. A few remaining individuals of this hiding species may thus have hitherto escaped the attention of British naturalists; whilst the very recent discovery of a new British snake renders the discovery of a new Chelonian less improbable than it would otherwise be.—Edwin Brown; Burton-on-Trent, October 10, 1862.

Capture of another Specimen of the Lizard Snake: Birth of Young Ones.—Mr. Buckland has procured from the New Forest a fine female specimen of the lizard snake (*Coronella austriaca*), in addition to the one already mentioned as in the possession of the Zoological Society. On Tuesday morning she produced six young ones, two of which were drowned in the water provided for their mother, and of the four survivors Mr. Buckland thus writes in the 'Field' newspaper:—"I really wish my good friends who read the naturalist columns of 'The Field' were by my side now, and I would show them one of the prettiest sights they ever beheld; the old mother snake is coiled up in a graceful combination of circles; her little family are nestled together on her back; they have twisted their tiny bodies together into a shape somewhat resembling a double figure of 8, and there they lay basking at their ease in the mid-day sun. The old mother snake is vibrating her forked tongue at me, the little ones are imitating their mother's actions, and are vibrating their tiny tongues also; the mamma's head is most beautifully iridescent in the sun, and her babies are in this respect nearly as pretty as their mother. They are about five inches long, about as thick as a small goose-quill, and smoother than the finest velvet. Their eyes are like their mother's; their tails are unlike their mother's; she has lost the tip of her tail—her young ones have not, they are tapered off to a point as sharp as a pin. Their skins are of a brownish black colour, and marked like their mother, only that these markings are not yet well developed. The scales on the under parts of their bodies are a beautiful pale glittering blue; altogether, they are real little beauties." This interesting occurrence proves that the lizard snake is viviparous, in this respect

assimilating to the viper (*Pelias berus*) rather than the common snake, *Coluber Natrix*.—*Edward Newman*.

Singular Capture of an Octopus.—The ship's company are fishing from the main-deck ports, when some excitement is occasioned by one of their hooks being seized apparently by a large fish. The imaginary prize is heavy and is rapidly hauled up, when it appears to the amused bystanders in the form of an old iron tea-kettle without a spout! Curiosity induces a sailor to peer into the interior, when he observes two eyes of some strange animal undreamed of in his philosophy gazing up at him, but the occupant cannot be dislodged. Here is a pretty kettle of fish! As persuasion is of no avail a bold hand is introduced, when it is immediately seized by a fleshy coil and retained by a hundred suckers. The hand is forcibly withdrawn in terror, while the great eyes continue to stare upwards from the profundity of the kettle. The kettle, with its mysterious lodger, are now submitted to the Doctor, who is expected to solve the question of this questionable shape. While pondering on the best means of dislodging the creature, he unexpectedly relieves us from the dilemma by suddenly making his exit and shuffling rapidly along the deck in a grotesque and startling manner, revealing at the same time the form and action of a great warty Octopus. Alas! poor *Octopus rugosus*. He very soon becomes a specimen in spirits.—*Arthur Adams; Ascension, May, 1862*.

Notes on some peculiarities of Insect Life in 1861.—Never, perhaps, were insects generally so scarce as in 1861; the effects, no doubt, of the cold wet summer of the previous year. Some remarkable exceptions to this, and one or two other peculiarities, I have thought worthy of record. Thus, while bees, Fossores and sawflies were so scarce that they were said not to be in existence at all, yet wasps were in such abundance in some places as to become a perfect pest. Everywhere in our own district more than plenty of them were astir, and these were principally the ground wasps, *Vespa vulgaris* and *V. rufa*. In the vicinity of Wigton, Cumberland, the wasps were abundant enough to dispute possession of the cherry crops with their owners; these also were the ground species. Near Brampton and eastward by Lannercost, towards our own district, one of the tree wasps, *Vespa norvegica*, was the predominant species. By the roadsides leading from the railway station to Naworth Castle their nests might be noticed in especial abundance. Near Lannercost and up to the village of Banks the same species has colonized the gardens, using the branches of the gooseberry bushes on which to suspend their nests. I was often asked to catch the hordes of "tartars" with my "fly-catcher," a task, however, which I most respectfully declined. One of the ground wasps would appear to have tenanted a fallow field at Walton-wood-head, and were so desperate in their attacks on horses and men that the farmer had to cease work until the nests were sought out and their inmates destroyed. Also very extraordinary was the occurrence of the common species of *Apathus* (*A. campestris* and *A. Barbutellus*), in very nearly their usual numbers, while the species of *Bombus* of which they are parasites were in such diminished numbers that certainly not more than one-fiftieth part of the usual number of individuals of our commoner species (*B. Muscorum*, *B. Pratorum*, *B. Lucorum*, *B. lapidarius* and *B. Hortorum*) were noticed; of the rarer species

(*B. senilis*, *B. fragrans*, *B. Sylvarum*, *B. Derhamellus* or *B. Scrimshiranus*) not a single specimen was seen during the whole season. The species of solitary bee taken was *Megachile circumcinctus*, of which I caught a pair on the sands near South Shields, and these were only about one-half the size of the specimens from the same colony which I took the previous year. During the whole season I only saw one fossorial insect, *Crabro dimidiatus*, although I kept a sharp look-out for them, the tribe being a great favourite of mine. Ants, I think, also were tolerably numerous: Mr. Perkins and I observed *Formica rufa* in great plenty in the woods near Bothal, and I noticed *Formica nigra* in much of its usual numbers when in Cumberland in June. The commoner yellow ants were plentiful also near the ballast heaps at South Shields. Earwigs were neither common nor destructive in gardens, and they were very few in numbers on the sea-coast, where they swarm in ordinary seasons. In Coleoptera some good things were taken, which will be noticed elsewhere. I never recollect a season in which so few sawflies were astir; the only species noticed was the one which infests the gooseberries. Hemipterous insects were exceedingly scarce, and although the water species were plentiful enough, yet many of them wanted wings, most likely from the deficiency of heat. Of many thousands of *Gerris paludum*, seen in the Ouse-burn in October, not one had wings or even wing-cases. I took some small bugs in copulâ early in March, which appears rather remarkable, as these insects are in the perfect state only in summer or autumn. Another peculiarity of this remarkable year was the abundance of winged Aphides in May, which were flying in great numbers in the lanes on the few warm still days we had towards the end of the month. I beat a grown species (apparently the *Callipterus Betulæ*, *Koch's Aphiden*, fig. 289), in great numbers out of birch, on the 18th of May, of which fully one-half had wings. I need scarcely observe that Aphides are produced in spring from eggs laid the previous autumn: these young are all without wings, and females; they in their turn produce other wingless females alive, and so on through many generations, until towards autumn, when winged males and females appear, and it is this brood which provides for the continuation of the species, and which, taking wing, are often forced upon our notice by their numbers on warm still days. Midges were also not wanting, as I found to my cost when beating the hedges in Cumberland. Neither were "clegs" wanting, and I noticed a rare *Tabanus (T. austriacus)* much too abundant for the comfort of a farmer's horses near Lannercost.—*Thomas John Bold*, in 'Transactions of Tyneside Naturalists Field Club,' vol. v. p. 219.

Entomological Notes for the year 1861.—Not only in our own district, but throughout Europe, have entomologists been complaining that there are no insects; from the beginning of the spring to the commencement of the winter there has been a very great scarcity of insect life. Cold and wet as last year was, larvæ of all kinds seemed abundant; and it was thought that this season, if fine, would have been an unusually good one for insect hunters: these predictions have not been verified; the prophets prophesied falsely, and, contrary to all expectations, insects never were scarcer. Bees, beetles, butterflies and bugs, as our cabinets can testify, have made a sorry show. Some usually common have not put in an appearance, of others perhaps one or two solitary specimens have been seen, but nothing has been abundant, save and except wasps; these certainly have proved the rule: they have had it all their own way, not only here but in the south as well; "from John o'Groat's to Land's End" everybody says we have plenty of wasps. There was an abundance of them in the spring: at Gibside, when we went to seek Andrenidæ, we found nothing but Vespidæ; when we

went out, later on in the summer, for beetles, butterflies and bugs, nothing was noticed but wasps; and in the autumn their numbers had not diminished. How are we to account for this superabundance of wasps, when even the common house-fly was not found as usual in the cream-jug at breakfast, nor on the sugar at tea? Such, however, was the case, and such also was the case in the year 1853—the same superabundance of wasps, the same scarcity of other insects.

Lepidoptera:—Butterflies it was no use looking after. The Orange-tip I saw but once; the Tortoise-shell, one on Good Friday and one since; one Red Admiral, no large Whites and but few small ones; the Meadow Browns, where were they? did anybody see them? The Blues held their ground for a few days in extremely limited numbers, and then they disappeared. But I must not omit mentioning, in order to keep up the spirits of our younger brethren of the net and pin, the occurrence of three of our rarer Sphingidæ in the district—*Acherontia Atropos* (Death's Head) was captured at Wylam, *Sphinx Convolvuli* at Newcastle, and *Deilephila Galii* at South Shields. Moths were few, and in many instances of smaller size than usual; this was the case also in the South, probably the effect of cold and damp upon the larvæ.

Coleoptera:—Land beetles of all kinds were scarce, and water beetles it was particularly remarked were in greatly diminished numbers; some of common occurrence were rare; others, local, have not been found. The common cockchafer I only saw three times all the summer, and the coastchafer (*Anomala Frischii*), though sought for particularly in its usual haunts (the links beyond South Shields), where it was abundant last year, has not been seen.

Hymenoptera:—*Bombi* few, but their parasites, the *Apathi*, one kind particularly (*Apathus campestris*) was common in the autumn: this is another problem which wants elucidation. Other bees rare, exceedingly so. Ichneumons and sawflies the same.

Diptera:—From the daddy-longlegs to the smallest black dung-fly, in greatly restricted quantities.

Such has been the state of the insect world during the season in this part of the country, and, though want of success may have damped the ardour of some young beginners, I hope in no instance that the fire has been quite extinguished, but trust that the sight of their empty boxes and blank spaces will, when the spring returns, give them a new impetus to pursue this very interesting branch of Natural History—Entomology.—*V. R. Perkins*, in '*Transactions of Tyneside Naturalist's Field Club*.

Captures near York.—I have taken eleven specimens of *Agrotis agathina* off the flowers of the heath, together with *Noctua neglecta*, of which latter I have also bred fourteen fine specimens, varying in colour from deep red to pale drab. I found the larvæ in the spring feeding on the dwarf willow. *Nonagria fulva*, *Apamea fibrosa*, *Miana arcuosa*, *Noctua umbrosa* and *Toxocampa Pastinum* I have taken pretty freely.—*J. H. Dossor*; East Parade, Heworth Road, York.

Occurrence of *Argynnis Lathonia* in Britain.—I observe that the occurrence of *A. Lathonia* so long ago as the year 1852 has been noticed in the last number of the '*Zoologist*' (Zool. 8204). I was not before aware that any doubt existed as to its having occurred many times. Eight localities are named for it in Mr. Stainton's '*Manual*.' In either 1858 or 1859 (I cannot distinctly remember in which of these years) seventeen specimens were reported to have been taken in this neighbourhood. I cannot in any way vouch for the truth of this, but I think it probable that some were taken. I can, however, speak with certainty as to one instance in which this insect

was taken by a friend of my own in one of the above-named years, and this specimen is now in my cabinet. It is an unusually large female in fine condition. It was seen flitting several times up and down a broad walk in a kitchen garden, and settled at last on a leaf, expanding its wings in the sun, when it was taken.—*W. Oxenden Hammond; St. Alban's Court, near Wingham, Kent, October 5, 1862.*

Occurrence of Sphinx Convolvuli near Sheerness.—Yesterday a seaman belonging to H.M.S. "Cumberland" brought me a specimen of the above, but it was perfectly useless, the body having been transfixd by a large copper nail, and the wings confined to the slip of wood upon which it was placed by means of glue! It was stated to have been caught upon a telegraph post near Sheerness, about three weeks previously.—*Henry L. Saxby; H.M.S. "Devonshire," Sheerness, September 23, 1862.*

Larva of Ourapteryx sambucaria.—I lately took a larva of *Ourapteryx sambucaria* feeding on ivy. Two days since I hastily removed some of the ivy leaves, intending to replace them with fresher ones, and in so doing I disturbed and broke through the silken thread, with which it had tied itself down to the stem, preparatory to transformation, which I had not observed to be approaching. The following day, on looking to see if the larva had again secured itself, it was not visible, but on turning over the earth at the bottom of the cage I found it buried rather deeply. Thus, the disturbance I had accidentally caused to the insect appears to have caused it to change its ordinary habit, and to adopt a totally altered arrangement for its transformation.—*W. Oxenden Hammond; St. Alban's Court, near Wingham, October 14, 1862.*

Larva of Ennomos erosaria var. canaria.—At the end of August of the present year I took a larva feeding on *Alnus glutinosa* (alder), of a dark red colour, but in other respects it does not well agree with Mr. Newman's description of the larva of *Ennomos erosaria* (Zool. 8173), as the crescentic white mark on the lobe of the crown and the continuous white line across the face were both wanting. There was also a great discrepancy in the time of feeding, time of appearance, &c. My moth came out on the 4th of September, a fine specimen of *Ennomos erosaria var. canaria*.—*H. J. Harding, Deal, September 29, 1862.*

Occurrence of Ennomos alniaria near Deal.—The other evening as I was returning from collecting *Aporophila australis*, &c., when nearly at my own door, I saw a large moth flying about a gas lamp, which at first I thought looked very like *Ennomos tiliaria*. I was not long before I had it in my box, and when I got it home I found it was a fine female of that rare insect *Ennomos alniaria*.—*Id.*

Description of the Larva of Abraxas ulmata.—Robust. When disturbed drops immediately and suspends itself by a thread. Head and legs deep black. Back creamy yellow, forming a broad stripe. Down the middle runs a slender uninterrupted black line; this is succeeded by a broader, uneven, subdorsal stripe, also black; then follows a white line, another black, another white, and another black. Lateral stripe chrome-yellow, having two black spots in each segment. Anal legs black, bordered with yellow. Claspers dirty yellow. A yellow stripe also runs down the belly. The black markings are very intense, and the different stripes clearly defined. Length an inch and a quarter. Feeds on the wych elm in woods and plantations throughout September and beginning of October. Like the perfect insect, it is a heavy, sluggish creature, and does not seem to thrive in confinement. It appears to have the power of producing an almost unlimited quantity of silk. Wherever I have met with this insect it has been in boundless profusion. Give the tree a tap with your stick, and down comes a whole shower of larvæ.—*J. Greene; Cubley Rectory, Doveridge, Derby, October 3, 1862.*

Acronycta Alni at Worcester.—On the 31st of August I took a larva of *Acronycta Alni* on some palings round a shrubbery in the village of Powick, about a mile from my house. The previous night had been very stormy, and I concluded it had been blown from some tree or shrub overhanging the palings. No alder was near, but I offered it *Seringa*, lime and elm being the only trees near the paling, and afterwards alder and other things, but all in vain. As it seemed about full fed, I hoped from day to day that it would make its cocoon, and, to enable it to do so, I supplied it with various kinds of rotten wood, as well as earth and moss, in a most convenient wooden box, where other larvæ had made themselves perfectly happy. But no, it would neither eat nor work, and, after some days of alternate restlessness and sulks, it retired into a corner of the box, where it gradually dried up, without any sign of disease or ichneumon; in short, it was a case just like that of Mr. M'Lachlan's larva (Zool. 8210). Had Mr. Moore's observations been published in time I should certainly have tried hollow sticks in my breeding-cage. Rotten wood was recommended to me by a distinguished northern entomologist, who also spoke from experience of the value of alder as food. A Worcester entomologist, however, bred a moth this spring from a larva that fed on lime. This is the second time that I have taken this larva in this neighbourhood; my first served me exactly the same, but I did not then know of the rotten wood. The restlessness in that case was very remarkable, and I believe it died as much from over-walking as from want of food. Could the nervous system of this larva be investigated by some modern Lyonnet, the difficulty of rearing it might be accounted for; but as *A. Alni* is so scarce, and Lyonnets are probably extinct, we must content ourselves with observing the habits and consulting the tastes of this fastidious creature whenever we have the opportunity. It is the duty of every one who takes the larva to publish his observations. If I should be fortunate enough to take another I shall certainly try the hollow sticks.—*E. Horton; Lower Wick, Worcester, October 2, 1862.*

Micro-Lepidoptera at Mickleham.—In the course of the past few weeks I have taken the following not generally common species of *Tineina* on Mickleham Downs:—

Zelleria insignipennella and *Z. hepariella*. Both these insects have been, as far as I can judge, far more common than usual. They are almost invariably beaten from yew trees. There appear to be some doubts as to whether they are really distinct, and at first I felt strongly inclined to share these doubts, but further experience of the insects induces me to think that they are really two good species,—a point that can only be settled by the discovery of the larvæ. When *Z. hepariella* first appears, *Z. insignipennella* is scarce, but later in the season the reverse appears to be the case, and on my last two visits I saw no sign of *Z. hepariella*; besides the latter insect is always smaller and generally darker and more obscure, but the head is much paler.

Gracilaria semifascia is not at all uncommon; beaten both from yew and juniper.

Coriscium cuculipennellum. A few specimens beaten from yew.

C. sulphurellum. I have taken about fifty specimens of this insect. The first two or three were beaten from yew, but I afterwards came upon their head-quarters in this wise: happening to beat an old lichen-covered sloe-bush, several specimens flew out, and this set me to work systematically at the few bushes I could find of this character, and I found that the amount of thrashing they stood before they would apparently yield up all their occupants, was most astonishing. Mr. E. Shepherd informs me that he has observed the creature to have similar habits in the New Forest. I can scarcely suppose that the larva feeds on lichen, a habit that would be so much at

variance with that of the rest of the family, but cannot help thinking that it may have some connection with the sloe.

Sarrothripa Revayana and *Peronea cristana* also appeared singly.—*R. M. Lachlan*; *Forest Hill, October 10, 1862.*

Occurrence of Pædisca oppressana near Willesden.—On the 20th of June last I captured a single specimen of this insect on a fence near Willesden, Middlesex. There were three or four large poplar trees close by.—*Percy C. Wormald*; *Kilburn, N.W., October 1, 1862.*

An Insect Gravedigger.—As I was sitting, this morning, on the lower step of my verandah, my gaze fixed listlessly, during the noontide heat, upon the gravel-walk before me. "Thinking," I verily believe, "of nothing," or, at most, entertaining a dreamy impression that I was becoming a focus for the concentration of the sun's rays, my eyes were suddenly attracted to an insect whose motions very soon rivetted my attention. The little creature, when I first caught sight of it, had already commenced, within four feet of the spot on which I was seated, its work of excavation; for as I looked it disappeared, and shortly afterwards returned to the surface of the ground, tail first, and, running backwards over a tiny mound it had previously made, deposited a grain of gravel, fully as large as its own head, *outside* the mound, with the evident intention that it should not roll back again into the cave it was in process of forming. This operation was continued with great rapidity, and ever as it re-entered the orifice I saw minute particles of sand fly upward, impelled purposely by its descending feet. The care with which the insect distinguished between the larger and the smaller grains was wonderful; those only whose gravity might have caused them to roll down again, had they been placed below the apex of the mound on the side on which the work was being carried on, were conveyed *beyond* the mound; the smaller grains were added to the mound itself without much apparent discrimination. After a time the work was evidently completed to the satisfaction of the labourer, for it flew away to the grass edging of a flower-border, distant about six feet from the cave, and immediately emerged from thence, dragging after it—for it was running backward—the body of a large spider, not long dead,—a spider whose bulk was at least three times as great as that of its intending sexton. On arriving within twelve inches of the sepulchre the insect left the corpse, and hastened thither, to ascertain, as I cannot doubt, whether or not the orifice was large enough for its admission: it was not so, and the grave-digger resumed his work, enlarging, though but very slightly—showing thus how true his eye was—the opening he had made. Returning to the spider, he dragged it onward, and, still running backwards, pulled it after him within the hole; and I noticed that, so nice had been the calculation, there was exactly sufficient space for the passage of the body,—sufficient, but not a hair's breadth to spare. The insect soon once more emerged, and immediately commenced filling in the grave,—a work he speedily, though carefully, accomplished; and when that work was completed he ran round and round with great celerity upon the surface, scattering the gravel in all directions with his feet, with the undoubted object of obliterating even the faintest mark by which his *cache* might be discovered; and so effectually was this portion of his operation executed that half-an-hour subsequently I was unable (though I searched diligently and anxiously, assisted too by eyes far keener than my own,—eyes that had also watched the whole transaction), to find it out myself. Meantime, having sent for my net, I, not without some feelings of compunction, captured the little workman, and, putting him to death by the shortest possible method, made a sketch of him for future

reference. A reflection, and I conclude. How slender is the line of demarcation separating instinct from reason! and how marvellous is the creative power that could have imparted, to an insect so insignificant, faculties such as I have attempted, however feebly, to describe!—*Vincent Clementi; Peterboro, Canada West, July 26, 1862.*
—*Communicated by the Rev. J. F. Dawson, M.A.*

Description of the Larva of Phytonomus Pollux.—I have this season bred several specimens of *Phytonomus Pollux* and the variety *alternatus*, from larvæ found feeding on *Ceanothe pimpinelloides*, in the vicinity of Exeter, and not having ever seen a description of these larvæ in any work, I beg to append one for the use of others. It is of a pale yellowish green colour, with the head black and rather small, the three anterior segments somewhat suffused with blackish green; this is continued along the sides of the larvæ above the spiracular line to the penultimate segment of the tail. There are lappet-like projections from the third anterior segment to the penultimate one of the tail, forming eight bright pale yellow spots; the spiracles themselves black, each of the yellow lappets have two black dots placed horizontally; each segment, which is much wrinkled, has eight minute brownish dots, placed on an elevated ridge, each surmounted by a bristle. Legs very rudimentary, the anterior indicated only by black points. Length of the body 2—2½ lines. These larvæ went into pupæ on the 28th of June, and came out on the 10th of July. They spin a beautiful open net-work cocoon, the meshes of which are nearly round, the angles being obliterated by the adhesion of the transverse lines forming the net-work. The pupæ do not lay at the bottom of the cocoon, but are elevated to a considerable angle at the head, so that the cocoon in reality is shorter than the pupa, but very wide in proportion. These cocoons are not made of silk, but of a gelatinous substance, semitransparent and tough; they are not soluble in nitric acid, which is very remarkable: whatever this substance may be its power of resistance of this powerful solvent is something very strange. I immersed a cocoon in this acid for three hours, and it came out as perfect as it went in. The larvæ of this species feed in the flowers and unopened buds of the *Ceanothe* in May and June, and when feeding, to compensate for the want of legs, they turn themselves half round the umbellules, and so hang on by pressure of their bodies against the stem. The varieties of the imago of this species are very striking and very decided, and might easily be mistaken for distinct species if colour and markings were only considered, but form and sculpture stamp the species.—*Edward Parfit; Devon and Exeter Institution, October 2, 1862.*

Description of the Larva of Phytonomus Rumicis.—The larva of this species is very much like the preceding, the principal difference being that the three anterior segments are more suffused with blackish green, and this colour is continued beneath to the end of the third segment from the apex of the head, the rest of the under side being yellow. This colour penetrates the other in a narrow stripe to the head. The habits and every other particular the same as *P. Pollux*. I have two pupæ of a parasite which spin up in the cocoons of this species which have not yet come out; they are probably *Ichneumons*, as they have all the appearance of such: these will not I suppose come out before the spring?—*Id.*

Notes on Phryganidæ from South Devon.—Having lately made a short stay in South Devon, chiefly with the object of collecting *Phryganidæ*, I thought that a few words on the success met with might be acceptable to the readers of the 'Zoologist,' and perhaps induce some to turn their attention to these much neglected but highly interesting insects. Had the weather been finer it is possible that more might have been

done, but at Plymouth, where I stayed nearly a week, "west country" weather prevailed to such an extent that one is almost inclined to believe the saying current in the more easterly parts of the county, that "it always rains at Plymouth," an accusation, however, which is indignantly denied by the inhabitants. For those species of Phryganidæ that require the highly aerated water of running streams for their successful development the boulder rivers of South Devon are particularly adapted. My attention as a Londoner was especially turned to these rivers, and from that reason the species of Limnephilidæ, most of which breed in standing waters, are poorly represented in the list which follows. It is possible from the comparative absence of suitable breeding places that these are really not plentiful. The localities visited extend from Exeter to Plymouth, and so of course include the various streams that have their origin on Dartmoor. The spot that I found most productive was Shaugh Bridge, about a mile from the Bickleigh station on the Tavistock Railway. Here two rushing torrents, known as the Rivers Meavy and Cadworthy, unite amidst scenery of the most romantic nature. For the knowledge of this and many other interesting localities I am indebted to the courtesy of my friend Mr. Reading. The following is a list of the species taken :—

Limnephilus Auricula, *Curtis*. Dawlish.

L. costalis, *Curtis*. Abundant in a marshy spot on Dawlish Warren.

Stenophylax striatus, *Pictet*. One specimen at Cornwood (River Yealm). Apparently a scarce species everywhere.

S. stellatus, *Curtis*. Dawlish.

Halesus digitatus, *Schranck*. Dawlish and Shaugh Bridge.

H. flavipennis, *Pictet* ? *Stephens*. Moderately common by most streams.

Sericostoma Spencii, *Kirby*. A few specimens.

Mormonia hirta, *Fabr*. Common.

M. irrorata, *Curtis*. Of this little species, which has hitherto been a great rarity (not more than half-a-dozen specimens being in collections both here and on the Continent), I captured eight or nine. It evidently prefers spots where the water is very shallow, and in two localities I found it among the damp moss about the sides of quarries, where there were merely slight dripping springs.

Hydroptila ——— ? Very abundant at Dawlish, coming into the open windows in swarms.

Odontocerus albicornis, *Scopoli*. Single specimens at Exmouth, Dawlish and Ivybridge (River Erme).

Leptocerus bifasciatus, *Olivier*, *Pictet*. This beautiful black, white-spotted species was not uncommon at Dawlish, dancing about in small swarms over the surface at mid-day.

L. (Setodes) bicolor, *Stephens*. Bickleigh.

Rhyacophila dorsalis, *Curtis*. Abundant by all running streams. At Tavistock, where the waters of the Tavy are much polluted by mine water, this was the only species that frequented the river side, though by a small stream that runs into it other species were as common as elsewhere.

R. munda, *M'Lachlan*. This species, which I first discovered last year at Shaugh Bridge, was common at the same locality, and I also found it at Ivybridge and Cornwood. It probably frequents all the Dartmoor streams. All my specimens are males. Possibly the female is so like that of *R. dorsalis* that they are confounded.

Glossosoma fimbriata, *Stephens*. Generally common.

Berœa ——— ? Dawlish. The small black insects in this genus are little understood.

Chimarra marginata, Linn. One specimen only at Shaugh Bridge. Mr. Reading informs me that earlier in the year this is very abundant on the mossy boulders in the middle of the stream.

Plectrocnemia conspersa, Curtis. Dawlish.

Polycentropus irroratus and *P. multiguttatus*, Curtis. Of each several specimens.

Philopotamus variegatus, Scopoli. Abundant by all streams; possibly *scopulorum* is also present, but I am as yet not able to separate them satisfactorily.

Philopotamus? *occipitalis*, Pictet (*Aphelocheira subaurata*, Stephens). A few specimens. Those from Shaugh Bridge seem darker, and are perhaps distinct.

Aphelocheira flavomaculata, Stephens. Mr. Reading sent me a specimen of this from Cornwood early in the summer, and I met with two examples in the same locality.

Tinodes pusillus, Curtis. Dawlish.

Hydropsyche ———? Several specimens at most of the localities visited. I dare not at present even hazard a conjecture as to the name.

I also brought home many specimens of Ephemeridæ, Perlidæ, &c., the determination of which remains for some future time. In conclusion I again say that I shall be very glad to see any specimens that entomologists may have collected, especially from Scotland, Ireland and Isle of Man.—R. M' Lachlan; Forest Hill, September 23 1862.

Proceedings of Societies.

NORTHERN ENTOMOLOGICAL SOCIETY.

July 28, 1862.—The Meeting took place at the residence of Mr. Thomas Hague Stalybridge. Mr. N. COOKE, President, in the chair.

Exhibitions.

Mr. Birchall exhibited upwards of six hundred specimens of Lepidoptera, captured in Ireland during the last week in June; among them were fine series of *Chortobius Davus*, *Zygæna Minos*, *Lithosia aureola*, *Aspilates strigillaria* (variety), *Dianthæci Nisus*, *D. Cucubali*, *Cucullia Chamomillæ*, *Erastria fuscula*, *Banksia argentata*, *Hydrelia unca*, *Melanippe hastata*, *Serricoria littorana*, *Eupæcilia albicapitata* (see 'Entomologist's Annual' for 1862); also a single specimen of a *Noctua*, apparently allied to the *Dianthæciæ*, and new to the British list; its name has not yet been ascertained. Mr. Birchall brought for distribution among the members a number *Cossonas Jardia*, captured at Killarney.

Mr. B. Cooke exhibited *Coccyx finitimana*, a new species of *Glyphipteryx*, bred from leaves of *Vaccinium*, sent from Rannoch; a new species of *Tinea*, bred from larvæ which fed on Stilton cheese; three species of *Campoplex*, bred from cocoons *Cimbex Betuleti*? sent from Rannoch; and *Leptocerus bifasciatus*, captured Bramhall.

Mr. N. Greening sent the following insects for exhibition:—

1. Eleven specimens of *Biston betularia*, bred from a male of the ordinary colour and a black female; five of these were of the ordinary colour and six perfectly black. Mr. Greening has now a large brood feeding reared from the eggs of a pair of total black ones.

2. *Eupithecia trisignata*, reared from the larva.
3. A pair of *Noctua ditrapezium*, also reared; these were very large, expanding an inch and three-quarters.
4. *Sesia Sphegiformis*, believed to be the first ever bred in England.
5. *Sesia Scoliaformis*.
6. *Æcophora grandis*, from Llangollen.
7. *Pterophorus lithodactylus* and *P. osteodactylus*, from Llanferris.
8. A bunch of cocoons of *Eonychia cingulalis*.
9. A series of a new species of *Tinea*.
10. Ten varieties of *Abraxas grossulariata*, bred this year, the larvæ having been fed on black currant and radish tops; there was not one of the normal colouring, and three of them are splendid varieties.

Mr. C. S. Gregson sent for exhibition *Pterophorus osteodactylus*, discovered by himself when on the rocks at Llanferris, on the 22nd of July, 1862.

A note from Mr. Gregson was read, in which he mentions having reared *Cimbex Lucorum*, male and female, and its parasite, from pupæ sent from Scotland by Mr. John Stafford: it is a true birch-feeder, and new to Britain.

A pupa of *Petasia nubeculosa* was exhibited to show the large hook or forked-tail appendage.

Mr. N. Cooke exhibited seven specimens of *Sesia Scoliaformis*, four bred and the other three captured by himself and son at Llangollen, on the 13th of July, 1862.

The Secretary read the following note by Mr. Gregson:—

Note on Mr. Newman's Description of the Larva of Orgyia fascelina (Zool. 8078).

"One error in Natural History is well known to be the father of a whole race of errors, but it is especially likely to be so when made by a man of Mr. Newman's standing, for all book-makers will claim to be excusable if they copy his works. I therefore wish to call the attention of naturalists to one or two mistakes he has evidently been led into by some one who knows nothing whatever about the habits of this species. Mr. Newman says the eggs are laid in August on the leaves of *Salix fusca*. Here are two mistakes in the length of one line; the first is impossible, unless the insect lives two or three months in the perfect state, for, as a rule, it appears in May or June on the banks of the Mersey, and any boy knows that this species lays its eggs round a rush, stick or twig of any sort, just as does *Saturnia Carpini*, and some of the collectors in this neighbourhood would prefer searching for its eggs or larvæ on a thorn hedge if they wanted a supply for their friends, not but what it will and does eat willow where no thorns are, just as it eats heath where there is neither thorn nor willow. The larvæ are abundant in this district on both thorn and willow, but I doubt if my practical friends here ever knew it to lay its eggs otherwise than round a twig or grass stem, where it forms a beautiful symmetrical object."

The Secretary then read the following paper by Mr. Edwin Brown, of Burton-on-Trent:—

On the Mutability of Specific or Race Forms.

"The question how did species originate has suddenly become the most absorbing scientific topic of the day, but it is doubtful whether we are ever likely to arrive at more than the barest inferential evidence touching the origin (properly so speaking) of species, or, in other words, at a knowledge of the earliest differentiation of forms when

first inanimate matter became animate. If, however, the phrase 'origin of species' be considered to relate only to the assumption by animals and plants of those exact forms which they now present to our observation, it is tolerably certain that careful reasoning from exact data will lead ultimately to correct notions as to the relationship by descent of races, and consequently to the origin of existing so-called species. Many years before Darwin promulgated his doctrine of 'selection of races' I had formed my own conclusions relative to the now fixedness of species, and being unable to find any support in nature to the theory of uniform 'progressive development,' I framed the hypothesis that species or forms are, and ever were, mutable, sometimes advancing in the scale of organization, sometimes retrograding, but always varying,—the sons from their sires, and the sires from the patriarchs of their respective races. I termed the theory 'The Mutability of Species, or the Mutation of Generations.'

"Mr. Darwin has dwelt ingeniously and satisfactorily upon one cause for the alteration of forms of life, *viz.* that of the greater fitness to surrounding circumstances in the struggle for existence of certain slight modifications of structure. He has dwelt so exclusively upon this branch of the great subject as almost to lose sight of other agencies; for example, the direct influences of climate and food, and the accumulative effects of those apparently causeless individual variations that take place at every generation. It is to the latter law that I am myself disposed to attribute the greater portion of the mutation of forms or of so-called species. Let us suppose a separation by an intervening ocean of the two portions of a large tract of land that were previously united, and let us further suppose the whole of this land to have been inhabited at the time of the cataclysm by some race, say of geodephagous insects. We will distinguish these two now separated portions of land as the eastern and the western. The generations of the insect in question that came into existence after the separation of the land would succeed each other as their ancestors had previously done, each individual differing somewhat from the parents and each pair handing down to its progeny a structure embracing what may, for the sake of explanation, be termed the hereditary typical form, together with a portion of the joint peculiarities of the parents themselves, and combined with that certain degree of individual peculiarity by which peculiar facies or appearance the new-born individual would be known to the critical eye from all other individuals of the same race. The conjoint effect of hereditary transmission of form and individual peculiarity will have taken in the eastern tract one direction, in the western probably another: food, climatic conditions of heat and moisture, and natural selection, will have acted directly and indirectly in giving some bias in respect of form, size, colour and appetites, which, in the individuals of either one of the restricted districts, will have assumed a degree of uniformity owing to the interbreeding. In the meanwhile, different influences have been operating in the other isolated district, and the mutable tendency of the race, on the ordinary doctrine of chances, will, almost as a matter of inevitable certainty, have set up a bias differing in some respects from that of the generations in the opposite district. It thus results that the longer the period of time during which separation has existed the greater the chance of divergence, and if the races in the two separated tracts of land have been kept apart for a long period of time, say for some thousands of years, we may reasonably look to find a very sensible divergence of forms, sufficiently so to set naturalists disagreeing as to whether they ought to call the forms by two different specific names, or whether the two should be considered varieties merely of each other. This is the view I took in reference to mutation of forms or transmutability of species,

and I now propose to lay before you the insects which, to my thinking, as nearly demonstrate the truth of that theory as demonstration can be arrived at. In the first place, I lay before you a series of North-American Lepidoptera, collected chiefly by the late Mr. E. Doubleday, and putting, as far as I am able, the European analogues side by side, you will see a striking illustration of the common phrase, 'the same with a difference.' Several years before the death of the late Mr. J. F. Stephens, I was talking with him on the subject of these very specimens, when he told me a friend had one day brought to him, by way of a joke, a box of United States Lepidoptera, they being the analogues of British species, when, on opening the box, believing them to be British, his involuntary exclamation was, 'What a wonderful assemblage of varieties.'

"It must be very far back in point of time, although perhaps, geologically speaking, of recent date, that the Atlantic was so far bridged over, as that the individuals of any race of insect could interbreed, and thus render the bias of mutation, to a certain extent, uniform throughout the larger area. We have, in the difference between the parallel forms now exhibited, a measure of the effects of separation through a very long period of time, and when we see, however decided the difference in minor characteristics, how slight is still the separation of form from form, we need not wonder that no appreciable difference can be found between the figures of the ostrich on ancient Eastern monuments and the bird itself still living, under the same circumstances of climate and food that surrounded it three thousand years ago, and of which fact Mr. Westwood makes so strong a point in favour of the permanency of species.

"The other specimens exhibited are *Nebria* and *Calathus* from the Shetland Isles. They will all be found to differ, to an appreciable extent, from specimens captured on the mainland of Britain. It is probable that the separation of these areas took place at a much later date than the epoch of the separation of North America from Europe. It would therefore have been interesting to have compared the Lepidoptera of Shetland and Britain, only that the distance to which the islands are removed from each other is so small as to vitiate the conditions of the experiment by individuals occasionally flying over from one area to the other. I regret I have intermingled in my collection specimens of several other species of Shetland Geodephaga with British-caught specimens, as nearly all the Geodephaga from those islands exhibited characteristic differences in the shape of the thorax, or of some other portion of the structure, distinguishing them at once from mainland specimens, and affording characters sufficiently definite for a manufacturer of species to found new specific names upon. To the naturalist who busies himself with nomenclature there appears to arise a great practical difficulty from the disbelief in the permanency of species; but does not also the naturalist who has full faith in the lastingness of specific forms, spend much of his time in trying to ascertain which forms are properly designated as species and which as varieties merely? I am inclined to think, when once the fixity of species has ceased to be a matter of faith, as it certainly will do sooner or later, principles of nomenclature will be framed that will sweep away that dreadful incubus of synonyms under which we now labour.

"Let us try to answer the following question on this subject, Ought the North-American and the European analogues of each other to bear the same or different names? Where a difference of form exists between the individuals inhabiting the two extreme geographical points of a large area, as when a North British form can readily be separated from a South British one, ought the extreme and all the inter-

mediate forms to bear the same cognomen? In the latter case, I would say, let all the forms bear one name corresponding to what we now call the specific name, but which would be better termed the 'race name,' adding to that name the name of the district in which the distinctive form occurs. When, however, allied forms are separated by a wide ocean, and there is consequently no opportunity of tracing the relationship of consanguinity, and thereby of ascertaining whether the divergence has become so great that there exists an inability to interbreed, it is better to give distinctive specific or race names, however strong may be the suspicion that the difference would break down were the two forms supplied with the means of intermingling. The question resolves itself pretty much, therefore, into a geographical one, and as such it will ultimately be treated. We need not dwell upon those individual varieties that occur in the same broods of insects, nor on the question of the limits of genera. All are agreed that chance varieties should bear one common race or specific name, and it is manifest that, if specific forms are found to be mutable the limits of genera cannot be more stable. Recent researches of entomologists prove that great differences exist between the external organs of generation of closely-allied species. To this circumstance probably may be mainly owing the fact that we find so few mules between races inhabiting the same district. This inability to interbreed may possibly prove to be one of the laws of Nature, by which excessive variation of individual forms is prevented.

"In our researches into the nature of species we need not attempt to go back to the origin of all things. Let the question of permanency or mutation of species be discussed as geological phenomena are reasoned upon by modern geologists,—beginning at the known, and working backward so far as reason and facts will safely carry us, leaving all anterior to that to speculative world-builders.

"The question of the primary origin of species has the same relationship to the question of the mutation or permanency of forms that Cosmogony has to Geology. One is a mere speculation, the other a precise science. We shall never know more about the first forms of the animals and plants that occupied the earth than we do about the origin of this planet itself, but we may surely entertain a doubt about the permanency of species without being ranked as dangerous schismatics. If, however, fair induction lead to the conclusion that all animal life evolved by slow degrees from some individual monad, I will not shrink from that conclusion. Surely it gives a worthier notion of a Creator to suppose that he foresaw all contingencies, rather than that he should be ever remaking and recreating by the direct interposition of his providence.

"In the eloquent language of an American writer, 'The scheme of creation is a question of *will*, and not, as the insanity of logic has assumed, of *power*. It is not that the Deity cannot modify his laws, but that we insult Him in imagining a possible necessity for modification. In their origin these laws were fashioned to embrace *all* contingencies which could lie in the Future. With God all is Now.'

Mr. Birchall did not see how the views of Mr. Brown differed from Mr. Darwin's theory.

The Rev. Joseph Greene remarked that East and West would produce forms of the same insect that, at a distance of time, would be mistaken for different species, and that before we can say an insect does this and does not do that, our observations must be much more extended than they are now.

It was also remarked that the wonder is that species have not varied more than

appears from the specimens exhibited, and the fact of the external organs of generations of closely-allied species differing so much tends to prove that species are permanent, also that some species so closely allied, in the imago as to be indistinguishable, are totally different in the larva state, and an interesting discussion ensued.—*G. H. Wilkinson.*

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

[It seems desirable to preserve some record of this important gathering, although the great extent to which the reports in the 'Times' newspaper have extended render anything approaching to a concise or condensed record extremely difficult. Below I have given but little more than the titles of the zoological papers, and some even of these have probably been omitted through inadvertence.]

Dr. T. Spencer Cobbold, F.L.S., offered some remarks on all the known forms of human Entozoa, illustrated by an extensive series of original drawings. He stated that the human body was liable to be infested by no less than thirty species of internal parasites, and he communicated the results of his studies and researches into the history, structure, habits, mode of development, and migrations of each individual form. He demonstrated the possibility of checking the progress of several fatal entozootic diseases, and he appealed to the Association to support him in his experimental researches into the mode of production of these remarkable animals. From the investigations which he had already carried on independently, Dr. Cobbold appeared to have obtained results of great importance, both in a social and economic point of view.

Professor Balfour read a paper by Mr. James Buckman, giving an account of experiments with the seed of malformed roots, and on the ennobling of roots, with particular reference to parsneps.

Dr. E. P. Wright read a paper, contributed by Mr. James Samuelson, "On recent Experiments on Heterogenesis, or Spontaneous Generation."

Professor Owen read a paper "On the Zoological Significance of the Brain and Limb Characters of Man, with Remarks on the Cast of the Brain of the Gorilla." The Professor exhibited two casts—one of the human brain, which had been hardened in spirits, and had therefore not preserved its exact form, but to all intents and purposes it would serve as an illustration of the human brain; the other cast was taken from the interior of the cranium of the gorilla. From an examination of these the difference between the brain of man and that of monkeys was at once perceptible. In the brain of man the posterior lobes of the cerebrum overlapped to a considerable extent the small brain, or cerebellum; whereas in the gorilla the posterior lobes of the cerebrum did not project beyond the lobes of the cerebellum. The posterior lobes in the one were prominent and well marked, in the other deficient. These peculiarities had been referred to by Todd and Bowman. From a very prolonged investigation into the characters of animals, he felt persuaded that the characters of the brain were the most steadfast; and he was thus induced, after many years of study, to propose his classification of the Mammalia, based upon the differences in the development of their brain structure. He had placed man—owing to the prominence of the posterior lobes of his brain, the existence of a posterior cornu in the lateral ventricles, and the presence of a hippocampus minor in the posterior cornu—in a distinct sub-kingdom, which he had called Archencephala, between which and the other members of the Mammalia the distinctions were very marked, and the rise was a very abrupt one.

The brain in his estimation was a far better guide in classifying animals than the foot, but the same difference that existed between their brains was also observable between their feet. The lecturer referred to a diagram which represented the feet of the aye-aye, the gorilla and man, pointing out the chief differences in the structure of the skeleton. These differences he considered sufficiently great to elevate man from the sub-kingdom to which the monkeys belonged, and to place him in a distinct sub-kingdom by himself.

Professor Huxley observed that the paper just laid before the section appeared to him in no way to represent the real nature of the problem under discussion. He would therefore put that problem in another way. The question was partly one of facts and partly one of reasoning. The question of fact was, what are the structural differences between man and the highest apes? The question of reasoning, what is the systematic value of those differences? Several years ago Professor Owen had made three distinct assertions respecting the differences which obtain between the brain of man and that of the highest apes. He asserted that three structures were "peculiar to and characteristic" of man's brain, these being the "posterior lobe," the "posterior cornu," and the "hippocampus minor." In a controversy which had lasted for some years, Mr. Owen had not qualified these assertions, but had repeatedly reiterated them. He (Professor Huxley), on the other hand, had controverted these statements, and affirmed, on the contrary, that the three structures mentioned not only exist, but are often better developed than in man, in all the higher apes. He (Professor Huxley) now appealed to the anatomists present in the section to say whether the universal voice of Continental and British anatomists had not entirely borne out his statements and refuted those of Professor Owen. The Professor then discussed the relations of the foot of man with those of the apes, and showed that the same argument could be based upon them as on the brain, that argument being that the structural differences between man and the highest ape are of the same order, and only slightly different in degree from those which separate the apes one from another. In conclusion, he expressed his opinion of the futility of discussions like the present. In his opinion the differences between man and the lower animals are not to be expressed by his toes or his brain, but are moral and intellectual.

Professor Rolleston said he would try to supply the members of the Association with the points of positive difference between the human and the ape's brain. For doing this we had been abundantly shown that the hippocampus minor and the posterior lobe were insufficient. As differentive they must be given up at last. But as much had recently been done for the descriptive anatomy of the brain by Gratiolet and others as had been done for astronomy by Stokes and Adams, for language by Max Müller, and that this had been ignored in this discussion was little creditable to British science. This analysis of the brain's structure had established as differentive between man and the ape four great differences—two morphological, two quantitative. The two quantitative are the great absolute weight and the great height of the human brain; the two morphological, the multifidity of the frontal lobes corresponding to the forehead, usually, popularly, and, as this analysis shows, correctly, taken as a fair exponent of man's intelligence, and the absence of the external perpendicular figure. This had been abundantly shown by Gratiolet. No reference to these most important matters had been made by Professor Owen, and this omission could not fail to put the British Association's repute for acquaintance with the work of foreign fellow-labourers at great disadvantage in the eyes of such foreigners as might be present. Professor

Rolleston concluded by saying that if he had expressed himself with any unnecessary vehemence he was sorry for it, but that he felt there were things less excusable than vehemence, and that the laws of ethics and love of truth were things higher and better than were the rules of etiquette or decorous reticence.

Mr. W. H. Flower, looking at the subject solely in an anatomical view and as a question of fact, stated that the result of a considerable number of dissections of brains of various monkeys was, that the distinction between the brain of man and monkeys did not lie in the posterior lobe or the hippocampus minor, which parts were proportionately more largely developed in many monkeys than in man, and that if these parts were used in the classification of man and the monkeys the series would be—first, the little South American marmosets, then would follow the baboons, the cercopithei, the macaques; then man must be placed, followed by the antropoid apes, the orang-outang, chimpanzee and gorilla, and last the American howling monkey.

Dr. Humphery and Dr. Molesworth having said a few words,

Professor Owen replied. Professor Rolleston had led the meeting to conclude that he had not paid any attention to the convolutions of the brain of mammals, and that the investigation of this subject was the exclusive property of the German anatomists, whereas he might be permitted to state that almost at the very time that Leuret wrote his memoir on this subject he had delivered a course of lectures on the convolutions of the brain, which, he regretted, had not been published, owing to the pressure of other labours; but the diagrams were still in existence, as his successor could testify, in the Museum of the Royal College of Surgeons.

Professor Owen next made some observations on the homologies of the bones of the head of *Polypterus niloticus*.

The next subject taken up by Prof. Owen was "On the Characters of the Aye-aye as a Test of the Lamarckian and Darwinian Hypothesis of the Transmutation and Origin of Species."

Mr. Newton read observations by Mr. A. D. Bartlett "On the Habits of the Aye-aye living in the Gardens of the Zoological Society, Regent's Park, London."

Professor Huxley observed that the Darwinian hypothesis must be worked out by patient inquiry, and be either confirmed or refuted by investigations and facts, which could hardly at present be gone into. All the necessary facts had not yet been discovered, and, if discovered, their significance could hardly be put clearly before a general audience.

The other papers read were by Dr. Cleland, "On Ribs and Transverse Processes, with special relation to the theory of the vertebrate skeleton;" and by Prof. Allman, "On the Structure of the Corymorpha."

Professor Owen exhibited and described the tooth of a mastodon, from tertiary marls near Shanghai, China.

Mr. H. C. Sorby, F.R.S., "On the Cause of the Difference in the State of Preservation of different kinds of Fossil Shells."

Dr. Allman, F.R.S., "On a New Form of Recent Echinoderm, and on its probable ontological Affinities."

Mr. J. W. Salter, F.G.S., "On the Identity of the Upper Old Red Sandstone with the Uppermost Devonian (the Marwood Beds of Murchison and Sedgwick), and of the Middle and Lower Old Red with the Middle and Lower Devonian."

Mr. S. P. Saville exhibited a skull of the *Rhinoceros tichorhinus*.

Dr. John Davy read a paper "On the Scientific Cultivation of Salmon Fisheries,"

by Thomas Ashworth, of Cheadle. The main objects of this paper were to show the great value of salmon fisheries, how they have been neglected in England, and how they might be improved. The produce of the English fisheries has fallen so low that it has been estimated not to exceed £10,000 per annum, and this including the fisheries of Wales; while the money value of the Irish, according to the reports of the Commissioners of Fisheries, is not less than £300,000 yearly: one fishery in Scotland, that of the Duke of Richmond, in the Spey, is said to return to his Grace £12,000 annually. The author, in illustration of what may be accomplished for the improvement of salmon rivers, describes what has been done at his fishery in Galway, and the results. In the short space of ten years the river has been rendered ten times more productive. During the present season as many as three thousand salmon have been taken with the rod. This great improvement has been chiefly owing to the great care taken in preserving the streams during the breeding season, at an expenditure of £500, and by introducing young salmon, artificially bred, into streams fitted for them, but from which the fish had before been excluded, owing to impediments preventing access from the sea. These impediments have either been removed or avoided by means of ladders so constructed as to render the passage to and from the sea easy. A striking example is given by him of a river in Ireland converted into an excellent salmon river by means of ladders. This river is in county Sligo, the property of Mr. Edward Cooper. The ladders are over a fall of about forty feet. So productive has this river, before barren, become, that in July last as many as a thousand salmon were captured in one week.

Professor Huxley made some remarks upon the natural history of the herring, and called upon

Mr. J. M. Mitchell, of Mayville, who read a paper "On the Food of the Herring," in continuation of observations communicated to the Association at Oxford and Manchester. Mr. Mitchell contended that the herring does not confine itself to one species of food, but that it feeds upon Crustacea, the young of other fishes, its own young, ova, worms and flies.

Dr. John Davy read "Some Observations on the Vitality of Fishes, as tested by increase of temperature." The experiments described by the author were made on eleven different species of fish of our lakes and rivers, of which the several kinds of Salmonidæ were of the number. The results were that a temperature of water between eighty and a hundred degrees was fatal to each kind. The Salmonidæ were those which were most readily affected by elevation of temperature, the other species bearing it according to their kind somewhat better. The results generally were pointed out as of some interest in relation to the *habitats* of different kinds of fish, and also as tending to prove that the accounts given by travellers of fishes existing in hot springs are exaggerated, and not founded on accurate observation.

Dr. John Davy also read "Some Observations on the Coagulation of the Blood in relation to its cause." These observations were chiefly made to test the hypothesis brought forward by Dr. Richardson, that the coagulation of the blood mainly depends on the escape of ammonia. The many results described by the author were opposed to this view. First he showed that blood in its healthiest state contains no appreciable quantity of the volatile alkali; and, secondly, that ammonia added to the blood in a notable quantity did not arrest the change. Other experiments were described of a confirmatory kind.

The conclusion finally arrived at was that we are yet ignorant of the cause of the

phenomenon, and that the hypothesis of Dr. Richardson, if acted on in medical practice, must be attended with risk.

Sir C. Nicholson gave a clear and succinct account, with the aid of a large map from the Royal Geographical Society, of recent explorations in Australia, especially those of Burke and Wills, Gregory, &c. The tide of emigration appears to be flowing northward of Queensland, as far as Cape York.

Mr. Dunn read "Some Observations on the Psychological Differences that exist among the Typical Races of Man."

M. Jules Gerard, the famous lion-killer, read a paper in French upon an exploration which he proposes shortly to make in Central Africa, from Sierra Leone to Algiers, by way of Timbuctoo. M. Jules Gerard bore high testimony to the merits, as an African traveller, of Mr. Oswell, who, thanks to his rifle, never found any difficulty in obtaining subsistence, and whose example would stimulate him in his expedition. On leaving Sierra Leone he proposed to visit the source of the Niger, and also the republic of Liberia. He should then make for the Kong Mountains, between which district and Timbuctoo a different race of natives was found. He did not propose to travel with a caravan, but with the tribes of the district. At Timbuctoo or Ain Saleh he hoped to discover the papers and journals of Major Laing, the African traveller, who was assassinated near Timbuctoo. M. Gerard expressed a confident belief that these papers were still in existence, since the natives of the interior had almost a superstitious veneration for written characters, and treasured the most worthless scraps until long after they were legible. His route would be through a country possessing a double interest, both geographical and ethnological. The journey was long and perilous, but he had weighed the difficulties of the route, and confidently expected to make his way from Sierra Leone to Algeria in safety.

M. DuChaillu said the section must rejoice at this new exploration of the interior of Africa, starting from the West Coast. Perhaps M. Jules Gerard would succeed in finding some new species of animals which would frighten us.

The Rev. H. B. Tristram, M.A., one of the deputation from Newcastle-on-Tyne, said that he had been in a portion of the country which M. Gerard proposed to visit, and had once met him in his Spahi uniform in the Desert, although M. Gerard was not likely to remember the circumstance. He could not but fear that M. Gerard had underrated the dangers and difficulties of his exploration. The great difficulty would be in getting from Timbuctoo to Ain Saleh. The tribe of Touaregs, who inhabited the Great Desert, were very suspicious and lived by black mail. If they were Pagan tribes M. Gerard would be safe in travelling with them. It was only where the Moslem bigotry came into play that the lives of Christians were unsafe.

M. Gerard said that Mr. Tristram was quite right. He knew the difficulties of his enterprise and had studied them a long time. He believed he should find friends among the native tribes in consequence of the recommendations he should procure from those who traded with them. He proposed to start next month for the western coast, which would be his point of departure.

ENTOMOLOGICAL SOCIETY.

October 6, 1862.—F. P. PASCOE, V.P., in the chair.

Donations.

The following donations were announced, and thanks ordered to be given to the respective donors:—‘*Proceedings of the Royal Society*,’ Vol. xii. No. 51; presented by the Society. ‘*The Journal of the Royal Agricultural Society of England*,’ Vol. xxiii. No. 49; by the Society. ‘*The Zoologist*’ for October; by the Editor. ‘*The Intellectual Observer*’ for September and October; by the Publishers, Messrs. Groombridge & Sons. ‘*Exotic Butterflies*,’ Part XLIV.; by W. W. Saunders, Esq. ‘*The Journal of the Society of Arts*’ for September; by the Society. ‘*The Athenæum*’ for September; by the Editor. ‘*The Journal of Entomology, descriptive and geographical*,’ No. 6; by the Proprietors. And the addition to the Library, by purchase, of the ‘*Genera des Coleoptères d’Europe*,’ Livraisons 108 à 111, was also announced.

Election of New Member.

Thomas Edward Hughes, Esq., of Wallfield, Reigate, was ballotted for and elected a Member of the Society.

Alteration of the Bye-Laws.

A copy of the Bye-Laws of the Society, embodying certain proposed alterations therein, was laid on the table and taken as read to the Meeting. Notice was given that a Special General Meeting would be held, for the consideration of such alterations, on Monday, the 1st of December next, at 7 P.M.

Exhibitions, &c.

Mr. Stevens exhibited *Adelops Wollastoni*, of which he had recently captured upwards of a hundred specimens at Hammersmith, chiefly under rhubarb plants.

Sir John Hearsey exhibited numerous Homoptera, principally *Cicadæ*, collected by himself in Northern India.

Mr. Desvignes exhibited a remarkable variety of *Cynthia Cardui*, taken on the sands at Margate, at the end of July or beginning of August last. The captor, Mr. Henry L. Stretton, of Forest School, Walthamstow, saw at the same time another specimen, which he considered to be the mate of the captured one; the latter was very similar to, but even more abnormal than, the variety figured in Westwood and Humphrey’s ‘*British Butterflies*’

Mr. C. Fenn exhibited a Lepidopterous insect, apparently of the genus *Aspilates*, which was taken near Black Gang, in the Isle of Wight, at the end of August last, in company with specimens of *Aspilates citraria*. It was considered by most of the Lepidopterists present to be a variety of *A. citraria*, and was remarkable for its extremely glossy and silken appearance, the absence of marking on the upper side, and the blackness of the under side of the wings.

Mr. F. Moore exhibited a specimen of the “*Kolisurra*” silkworm moth of the Deccan (*Antheræa Paphia*, var.), which had emerged from the pupa in this country on the 15th of September last. He also exhibited a specimen of *Epicopeia Polydora*, Westw., and a drawing of the larva. The imago had emerged on the 18th of August last. Both the pupa and the drawing of the larva had been received from Captain T.

Hutton, of Mussooree, N.W. India, with the following note, dated November 1st, 1861 :—"I captured here, this season, for the first time in twenty years, a specimen of *Epicopeia Polydora*. Since then I found, feeding on an oak tree (*Quercus incana*), at an elevation of 5200 feet, several caterpillars of a very curious appearance, which I am inclined to think belong to this species, simply because I know not to what else to refer them, and have never seen them before. When in motion they advance very slowly and awkwardly, with a wriggling gait, shaking themselves from side to side as if tottering on their feet; the head is only seen when the animal moves, and is jet-black, the whole body being densely clothed and concealed in long flossy stuff, an inch in length or more, resembling glossy floss silk, of a dazzling whiteness: this falls off to the touch in white powder. When the worm is ready to turn it descends from the tree, and spins a few silken threads around and over it, to hold dead leaves together, on the ground, in holes and corners at the roots of the trees, under stones, or such-like places, denuding itself of and enveloping itself in the white floss, for the purpose apparently of keeping itself warm during the winter months. The caterpillars were found small in the beginning of September, and in the first week of October they began to turn. The white floss stands up erect on the body, and has often a slight curl at the summit; when denuded of this the animal was of a dull livid olive-brownish hue."

Prof. Westwood remarked that the exhibition of *E. Polydora* was peculiarly interesting, from the fact that for a long time only a single specimen of the imago was known; and it had been a question between the late Edward Doubleday and himself whether it was a butterfly or a moth. The discovery of the larva proved that the insect had been properly referred to the Bombycidæ.

Mr. Newman communicated the following remarks on the ravages committed by the larva of *Zeuzera Æsculi*, and stated that the damage done to the young hop-poles in a single plantation in Sussex was estimated at a thousand pounds at the least:—

Destructive propensities of the Larva of Zeuzera Æsculi.

"I beg to exhibit some young shoots of the ash, the vitality of which has been entirely destroyed by the larva of *Zeuzera Æsculi*. In some parts of Sussex, Surrey, Kent and Herefordshire immense numbers of these young ash trees are grown for hop poles; but I have never before met with an instance in which they were seriously injured by the ravages of an insect. The information I have now the pleasure to hand the Society has been kindly transmitted to me by Mr. Jenner, of Lewes, so well known for his researches into the Diatomaceæ. In the spring of the present year the woodreeve and bailiff of Mr. J. C. Courthorpe, of Whyleigh, near Ticehurst, in Sussex, were greatly surprised to see innumerable young stems of previously healthy ash trees dying and dead, the bare leafless tops being very conspicuous. This led to an examination with a view to ascertaining the cause. On cutting off a number of these tops, the interior of the shoot was found to be occupied by what was described as a large white maggot with a few black spots on it: this had eaten the pith and a great portion of the wood, leaving only a thin layer of wood within the bark, and invariably killing the whole of the shoot above the spot where the egg was laid, and where the caterpillar had originally entered. A few of these shoots are now before you, and the plantation consisted entirely of such, fine young plants full of vigour and three to five feet in height. Before Mr. Jenner's attention was invited to the subject, Mr. Courthorpe had ascertained that the larvæ were those of *Zeuzera Æsculi*. When

Mr. Jenner examined the sticks, he found that in some the larvæ had already turned to pupæ; in others the full-fed larvæ were still unturned. In July, three of the pupæ produced moths, one a female, the others males. One died in its abortive attempt to become a moth, the stick having been cut off close to its head: another, concealed in a stick which had been split and again tied together, changed to a crippled pupa, and so died. In no instance could it be ascertained that the larva had eaten after the stick had been cut and its occupant examined. A number of pupæ still remain in the cut sticks. A somewhat careful examination of the sticks has led me to the following conclusions:—that the egg is laid on the smooth bark of the ash, just above one of the cicatrices whence a leaf of the preceding year has fallen: the little grub, entering the bark through a minute hole which it has gnawed, ascends the stem, at least as far as the next cicatrix, the excavation thus made assuming the shape of a very acutely pointed inverted cone; when arrived at its distal extremity the larva appears to turn round and descend to the point whence it started, devouring and widening its gallery as it descends: when arrived at the starting point the figure of its gallery is entirely changed, and is now a smooth cylindrical bore; at the lower extremity the larva gnaws the wood away, making a convenient chamber for its transformation, and leaving only the outer cuticle of bark reduced to the thinness of tissue-paper: this is ruptured by the moth in its struggles to escape, and it emerges from its prison head downwards. There is no evidence to show the duration of the larva state."

Mr. Waterhouse and Mr. J. S. Baly referred to cases of damage done to ash-poles by *Pachyta collaris*; and Prof. Westwood mentioned instances of the destruction of hop-poles by *Clytus Arietis*; the poles attacked by the *Clytus* were, however, of oak and not of ash.

Mr. Stainton communicated the following:—

Note respecting the Micropteryx bred from Hazel-leaves by Herr Kaltenbach.

"Having long had an intense desire to know what was really the species that Herr Kaltenbach had bred from hazel-leaves, I visited Aix la Chapelle for the purpose of satisfying my curiosity, being of opinion that, especially in Entomology, there is no saying more true than 'Seeing is believing.' Having now seen a series of the *Micropteryx* bred by Herr Kaltenbach, I am able to verify his assertion that the insect is *Micropteryx fastuosella*; and having seen the dried hazel-leaves in which the larva had fed, I can no longer doubt that a *Micropteryx* larva does feed in the leaves of hazel (*Corylus Avellana*). *M. fastuosella* is closely allied to *M. subpurpurella*, which we know to be attached to oak, and which has now been bred by Mr. Wilkinson from larvæ mining in oak-leaves, and it was rather a doubtful question whether *M. fastuosella* was really distinct from *M. subpurpurella*. In conversation with Herr Kaltenbach I learned that *M. fastuosella* appears with him as early as March, and that the feeding larvæ are to be found in April, when the nut-leaves are not yet fully expanded, and the dried nut leaves which I saw fully confirmed this statement by their small size. By the end of April the season for these larvæ is over.

"I should trust that with this information we should next spring have no difficulty in finding the hazel-miners in England."

Prof. Westwood exhibited a further portion of the additions recently made to the

Oxford Museum by Mr. Stone, of Brighthampton. The exhibition on the present occasion consisted principally of the dried leaves of trees and plants which had been mined by the larvæ of Lepidopterous, or in more numerous instances of Dipterous, insects. The leaves were arranged for the cabinet on cardboard, so as to show at a glance the distinctions between the various mines, — a point of considerable importance in the determination of the different species.

Prof. Westwood also called attention to the state of the turnip crops in the Midland Counties; he had been informed that the turnips had been attacked by a profusion of a green insect, like that on the rose, and hence he had inferred the presence of a species of *Aphis*. Some turnip-leaves had subsequently been sent to him; the outer ones were dead and shrivelled, and both sides of the leaves and the stems were coated with a thick white mould, but no *Aphides* were visible. Whether the white matter had by his informants been mistaken for the insect, or whether it was the result of the attacks of *Aphides*, the Professor was unable to state; but he thought the latter hypothesis the more probable, and that the plants had been reduced to a bad state of health by the attacks of an *Aphis*, and the mould had grown in consequence.

Prof. Westwood also made some remarks on the law of priority of nomenclature, with reference to Dr. Schaum's paper on that subject read at the April Meeting of the Society; he expressed his agreement with what is stated in the abstract of Dr. Schaum's paper (see 'Proceedings' for April), and was disposed to think that, at all events in some cases, a modification of the rule of priority might with propriety be introduced, as *e.g.* where the careful monographer of a group has been anticipated by a short interval of time by a mere casual describer.

Papers read.

The following papers were read:—"Descriptions of several new and rare Lucanoid Coleoptera," by Major F. J. Sidney Parry, F.L.S.; and "Descriptions of new East-Asiatic Species of Haliplidæ and Hydroporidæ," by the Rev. Hamlet Clark, M.A., F.L.S.—*J. W. D.*

Description of a new Species of Ptinella; being supplemental to the Paper referred to below. By the Rev. A. MATTHEWS, M.A.

THE *Ptinella* so often mentioned in my review of the genus (*Zool.* 8053—8060), under the name of *Ptinella ratisbonensis*, has proved to be a new and undescribed species. At page 8058 I alluded to the possibility of a mistake, as the name was founded on the conjecture of M. Aubé, who had never actually seen the true *P. ratisbonensis*. Only a few weeks ago Dr. Schaum very kindly gave me one of the original specimens from which Gillmeister's figure and description of *T. ratisbonensis* were taken; and I find it is totally distinct from the species in question. It has therefore become necessary to invent some fresh appellation for our British insect, and, considering the multitudinous

varieties under which it appears, I think "Proteus" is a very fit and proper term to use. Under the name of *Ptinella Proteus* I will now proceed to describe it.

PTINELLA PROTEUS, n. s.

L. c. $\frac{7}{8}$ — $\frac{9}{8}$ lin. Læte rufo-testacea, per totum corpus profunde punctata, longius pubescens; capite magno, prominulo; pronoto capite latiori, antice dilatato, ad basim valde contracto, angulis anticis productis, rotundatis, posticis acutis; elytris oblongis, apicibus rotundatis, pronoto vix latioribus, sed multo profundius punctatis, longitudinem capitis atque pronoti fere adæquatis, plus quam dimidium abdominis tegentibus; abdomine longo, obtuso, segmentis quinque apertis; pedibus atque antennis pallidis, robustis.

Alata. Colori similis ab altero sexu tantum differt alis atque oculis semper nigris.

Aptera, vel alis quam imperfectis ornata. In hoc sexu oculi sæpe nigri, sæpe testacei variant.

Hæc species, maxima sui generis, permultum variat, alas nigras nunc amplas, nunc parvas, aut pallidas plus minusve imperfectas, vel omnino nullas habet; interdum pronotum foveas aut duas, aut quatuor, sæpe etiam unam adhibeat; atque oculi nunc nigri, nunc testacei videantur. Nihilominus ab omnibus aliis differt magnitudine majori, pube longiori, pronoto antice multo validius dilatato, elytris oblongis, et *P. Mariâ* tantum exceptâ, abdomine obtusissimo.

Bright rufo-testaceous, strongly punctured throughout, and clothed with a rather long pubescence. Head large and prominent, somewhat triangular; thorax wider than the head, dilated anteriorly, and much contracted towards the base; the anterior angles produced and rounded, the posterior angles acute; elytra more strongly punctured, and scarcely wider than the thorax, oblong, with the ends rounded, about as long as the head and thorax united, covering more than one-half of the abdomen; abdomen obtuse, with five segments uncovered; legs and antennæ robust, testaceous.

With wings. This sex differs only from the other in having the wings and eyes always black.

Without wings, or with rudimentary wings. In this sex the eyes vary in colour from deep black to pale testaceous.

This is a very variable species; in some specimens the wings are black, either large or small; in others pale and merely rudimentary,

and in a few they are altogether wanting. The thorax is sometimes marked with depressions, varying in number from one to four; and in what may be termed the apterous sex the eyes are either black or orange, or of any intermediate shade.

It is nevertheless well distinguished from its congeners by its large size and long pubescence, also by the greater dilatation of the anterior part of the thorax, by the oblong shape of the elytra, and from all, except *P. Maria*, by the obtuse abdomen.

A. MATTHEWS.

Notes on Sea Anemones. — For the information of the anemone-loving readers of the 'Zoologist' who may visit Tenby, I send the results of my researches at that charming spot during three weeks' residence in July last. The spring tides were not very favourable for collecting, owing to a strong west wind, which blew back the spray and prevented me from visiting Lidstep Caverns and the Woolhouse Rocks, the latter designated by Mr. Gosse as "that rich preserve of zoophytic game." I availed myself of the assistance of the local collectors, Jenkins and his son Lewis, most honest, attentive and civil men, whom I have great pleasure in recommending to the notice of all aquarian naturalists visiting Tenby. The following are the species of Actiniæ which I secured, in addition to specimens of *Echinus miliaris*, *Holothuria*, *Aplysia*, *Doris*, *Eolis*, *Terebella*, and many beautiful kinds of star-fishes:—

Sagartia nivea. Very fine specimens and plentiful at Castle Rock, and *var. obscurata* on the Ridge between Caldy and St. Margaret's Islands.

S. rosea. Fine specimens, but not very numerous, at St. Catherine's and the Ridge.

S. venusta. Beautiful specimens at St. Catherine's, and a less brilliant variety at the Ridge.

S. viduata. Very scarce. Three specimens only were met with, and those at Castle Rock.

S. Bellis. Rather scarce. *Var. tregiensis* found at the Ridge, and several of the *var. modesta* in the same locality.

S. Troglodytes. Very numerous. Small specimens on Gascar Rock, and fine ones at St. Catherine's. *Vars. scolopacina*, *Aurora* and *auricoma* taken (one specimen only of the last-mentioned).

S. miniata. Good at Castle Rock, but small. Fine specimens dredged off St. Gowan's Head.

Bunodes gemmacea. Beautiful specimens and tolerably plentiful on the south and west sides of Caldy Island.

B. crassicornis. Fine specimens dredged off St. Gowan's Head.

Anthea Cereus, *vars. smaragdina* and *rustica*. At the Ridge.

Actinoloba Dianthus, *vars. brunnea* and *sindonea*. At St. Catherine's and Castle Rocks.

Actinia Mesembryanthemum. Abundant everywhere, and, although of the commonest kind, not to be despised, for many are very pretty.

Several of the *A. Dianthus* were double, *i.e.*, two disks sprouting out of one column.

The curious glaucous warty anemone (*Bunodes thallia*), discovered by Mr. Gosse at Tenby in 1854, was not to be met with. The collectors had never seen it until I showed them the plate in that gentleman's 'Actinologia,' and so I fear it is extinct on the Welsh coast. It is to be found (though scarce) at Ilfracombe, for I have two specimens in my tank which I took last summer. It behoves amateur collectors to be careful with the hammer and chisel in removing specimens of all kinds of anemones, for it is to be feared that for one secured, a dozen are frequently destroyed. I speak from what I have often witnessed at the coast. I have observed in my tank the peculiar elongating of one tentacle only (mentioned by Mr. Gosse) in the following species, viz., *S. bellis*, *S. rosea*, *S. venusta*, *S. Troglodytes* and *S. miniata*. Is it possible that Nature intended this as a means of assisting the creature to procure food? for I often notice that it quickly sweeps to the mouth any passing atom brought by the water in syringing. I was fortunate in capturing a very beautiful specimen of the Portuguese man-o'-war (*Physalia caravella*), with its attendant satellites, two *Velellæ*, on the Ridge before mentioned. I gave them to my friend the Rev. T. N. Hutchinson, but they survived only a day. They were the first taken at Tenby during the season, but Mr. Gosse, in a recent letter to me, says that "they occur on the coast round Torquay nearly every summer," and that "two have come under my notice this season." My old friends the *S. Sphyrodeta* (the spontaneous fission of which is described at Zool. 7977, but by an error therein called *S. nivea*) are well and thriving. The eight specimens which I received from Ilfracombe in August, 1861, have increased to thirteen, and so well and healthy are they, and of adult size too, that it is not possible to distinguish those which have spontaneously divided from their entire fellow captives. — *W. R. Hughes*; *The General Hospital, Birmingham, September 5, 1862.*

Collecting Sea Anemones.—Would you kindly allow me a small space in your valuable journal (the 'Zoologist') fully to indorse the opinion of your correspondent, Mr. W. R. Hughes, with regard to Jenkins and his son, of Church Street, Tenby. Last year I spent seven weeks at that place, and by the aid of Jenkins and his son I collected nearly all the same specimens of sea anemones mentioned by Mr Hughes, together with collections of shells and ferns (living and fossil), and have at all times found them just what Mr. Hughes says, most honest, civil and attentive men. But my present object in addressing you is to say that since I left Tenby I always have my sea anemones direct from Jenkins, and to ask some of your correspondents who are equally interested in the keeping of sea-water aquariums to do likewise, as they would by so doing not only forward an act of charity to a very poor but honest family, but would find themselves in possession of a very interesting collection of anemones. The last letter I had from Jenkins he bitterly complained of the way in which several of our London dealers in aquaria had treated him, some not forwarding his money at all, others only either after long intervals or until he had to pay a lawyer to get it for him.—*Frederick Newton*; 12, *St. Paul's Church Yard, October 3, 1862.*

[Although I shall always be willing to recommend a worthy man, I must caution my contributors against using the 'Zoologist' as a means of advertising: other collectors not thus recommended will consider it hard to have to pay for their advertisements.—*Edward Newman*].

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